

BOURNEMOUTH UNIVERSITY

The Nature of Evidence  
to Inform  
Critical Care Nursing Practice

Paul Fulbrook

Doctor of Philosophy

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**THE NATURE OF EVIDENCE TO INFORM  
CRITICAL CARE NURSING PRACTICE**

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## Abstract

This thesis presents a body of publications, in the area of critical care nursing, for consideration for the award of Doctor of Philosophy by Publication.

The thesis is presented in three chapters: Introduction; Body of Work; and Research, Knowledge, Evidence and Practice. In the first chapter the emergence of evidence-based practice is described, in general. Initially, an overview of the origins and trends of nursing research methodology is provided; the purpose of which is to set in context the *body of work*. Utilising a narrative approach (Boje, 2001; McCance *et al.*, 2001; Sandelowski, 1991; Vezeau, 1994) as a ‘personal journal of discovery’ I then reflexively describe my own development as a nurse researcher-practitioner, drawing on my own publications to illustrate my progress, the development of my thinking, my research practice and the development of my understanding of pragmatic epistemology.

The second chapter is comprised of my publications relevant to critical care nursing. Spanning a period of eleven years, they represent my contribution to critical care nursing knowledge.

In the concluding chapter I have summarised initially my own contribution to critical care nursing knowledge, before moving on to a more detailed critique of evidence-based practice. Finally I have made recommendations for the way forward.

In addition to presenting my *body of work*, the aim of this PhD is to challenge the current concept of evidence-based practice, arguing that its definition is too narrow to encompass the range of different types of knowledge that nurses use when caring for critically ill patients. I have utilised my own publications, to demonstrate how a variety of approaches are necessary to provide the best evidence for developing practice. I have positioned my argument within a theoretical

understanding of pragmatic epistemology. In this way, I am working towards the development of a science of practice. Simultaneously I am also, to some extent, challenging conventional concepts of what constitutes doctoral level knowledge and how a PhD looks.

My conclusion is that critical care nursing knowledge is drawn from many sources, and should be applied in an integrated way that enables practitioners to make a positive difference to the life of patients. Knowledge that is not or cannot be applied to practice is therefore of no value. The valuing of practice knowledge brings with it the requirement that all forms of knowledge (and their relevant methodologies) are considered as equal, in terms of their potential to impact on practice and that nothing should be rejected on paradigmatic grounds. In contemporary healthcare evidence is hierarchically valued and this raises many questions of equity. Where the value of knowledge becomes unequal is when its application to practice is limited. The corollary of a pragmatic epistemology is that it requires a pragmatic process to make it work. For me, at this point in time, the best available is practice development.

In summary, this thesis represents a construction of work that makes an original contribution to knowledge. The product of my thesis is a theory of pragmatic epistemology as the basis for a science of practice.

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### **Author's declaration**

I declare that, with the exception of joint publications within my *body of work*, all work presented in this thesis is my own.

Where joint publications are included, my contribution is clearly outlined in Appendix 1.

Paul Fulbrook

July 2003

**CHAPTER ONE**  
**INTRODUCTION**



## Introduction

The purpose of this work is to present a body of publications for consideration for the award of PhD by Publication.

The aim of this PhD is to challenge the dominance of traditional hierarchies of evidence-based practice, arguing that their current application is too restrictive and does not encompass fully the range of different types of knowledge that nurses use when caring for critically ill patients. I have utilised my own publications, to demonstrate how a variety of approaches are necessary to provide the best evidence for developing practice. Within this context, I am also challenging the positivist-rooted dominance of the ways that nurses and nurse researchers articulate nursing knowledge, and arguing for acknowledgement and acceptance of practice-based research approaches. This is all the more interesting in the context of critical care nursing, where traditional views of knowledge have arisen out of a technological rather than humanistic valuing of knowledge. Thus the traditionally used research methods in critical care have been largely empirical.

My work is presented in three chapters: introduction; body of work; and conclusions.

In the first chapter I have described the emergence of evidence-based practice in healthcare. Initially I have provided an overview of the origins and trends of nursing research methodology; the purpose of this section is not to engage in methodological debate, which has already been well rehearsed (e.g. Corner, 1991; Wainwright, 1997; Clark, 1998; Heath, 1998; Spitzer, 1998; Paley, 2000) but to set in context my own body of work. Utilising a narrative approach as a 'personal journal of discovery' I have then described my own development as a researcher-practitioner, using my publications to illustrate the progress and development of my thinking. Within the narrative I have engaged in a process of deconstruction-reconstruction, which has enabled movement on my part from the particular (my experience as a researcher-practitioner) to the general (the nature of knowledge for critical care nursing practice). In doing so, I have made explicit my own position in the valuing of pragmatic epistemology as the underpinning foundation of a science of practice.

Essentially, I have engaged in a path of ‘sciencing’ – which is very different to traditional understandings of ‘science’:

“Sciencing is coming to know and understand the meaning of phenomena of concern to a discipline. It is the ongoing process of inquiry that specifies knowing as the continuous incarnating of the unfamiliar with the familiar. The term *sciencing* implies that knowing is ever-changing with new experiences. Sciencing is in stark contrast to science, which specifies inquiry as pursuing and achieving the absolute truth, as if there are indisputable, unchanging truths.”

(Parse, 2001a, p.1)

The second chapter is comprised of my publications relevant to critical care nursing. These provide documentary evidence of my contribution to critical care nursing knowledge and illustrate the progression of my understanding of the different forms of knowledge required in working towards a science of practice.

In the concluding chapter I summarise first my own contribution to critical care nursing knowledge, before moving on to a more detailed critique of evidence-based practice in the critical care setting. Finally, in conclusion of my claim for a pragmatic epistemological foundation for the science of practice, I have made recommendations for the way forward.

In this thesis I have therefore worked on several different levels:

- My personal experience as a researcher-practitioner;
- My ontological, epistemological and methodological understanding of nursing knowledge in general, and how it is generated;
- The application of my understanding of knowledge to the practice of critical care nursing and how this impacts on the educational experience of working towards a PhD;
- My understanding of representations of knowledge through publication, in practice, and within a PhD thesis.



## Context of Change: Nursing's Position

Within the current context of the *new* National Health Service, presented in *The New NHS: Modern, Dependable* (Department of Health, 1997) and *A First Class Service* (Department of Health, 1998), the importance of knowledge-based practice is constantly emphasised, with the expectation that *evidence-based* decision-making and practice is at the heart of all healthcare (Bonell, 1999). Evidence-based *practice* has developed from evidence-based *medicine*, which was based on three principles: interpretation, application and dissemination of research findings (Reynolds, 2000).

However nursing, as a discipline, is something of a latecomer to the world of evidence. It is really only since the late 1970s that its research base has focused on nursing care (Stolley *et al.*, 2000). Indeed, 'caring' has emerged as the central concept: the *essence* of nursing (Saewyc, 2000; Watson, 1997). Whilst there are many meanings of caring in nursing (Kiser-Larson, 2000), two major theorists – Watson and Leininger – both identify the concept of caring as the central unifying domain of nursing (Cohen, 1991), and it is a central construct in intensive care nursing (Beeby, 2000a; 2000b). Thus it may be argued that knowledge for nursing practice – and therefore its evidence-base - is embedded within the concept of caring.

As nurse researchers and theorists began to identify 'softer', more subjective concepts (such as 'caring') a paradigm shift occurred in relation to the methodology and methods used to generate nursing knowledge; many more qualitative methods were employed. The act of caring is an artistic endeavour (Carper, 1978), which depends considerably upon the caregiver's general knowledge of a situation and their aesthetic knowledge of individuals. Yet, it is somewhat ironic that despite the huge amount of nursing literature that has been written about aesthetic *knowing* since the publication of Carper's seminal paper, that very little aesthetic *inquiry* has been encouraged or published (Vezeau, 1994) – although this is changing of late (for example, see Marks-Maran and Rose, 1996).

Traditionally, development of nursing theory had been based on positivist philosophy, utilising empirical methods of research, with nursing practice being rooted in the bio-medical model. During the 1950s to 1970s nursing was subjugated to medicine, and

led by women. As such it was doubly dominated (by men and medicine) and did not have the standing to challenge conventional science (Cody, 2000). Nurse researchers modelled themselves on their colleagues in the biomedical sciences, possibly in an effort to seek scientific validation for their work (Stolley *et al.*, 2000). Thus, the type of research knowledge generated during this period was largely empirical.

Quantitative and qualitative research are often said to be grounded in two distinctly different *paradigms*. A paradigm has been described as, “a ‘lens’ through which the social world is ‘viewed’,” with each paradigm presupposing “a particular set of fundamental beliefs, and the two sets are at odds with each other” (Paley, 2000 p.143).

The physicist Kuhn (1962; 1970) described a paradigm *shift* in the 1960s, claiming that the scientific community was moving towards a more interpretive view of the world. Although subsequently it has been suggested that Kuhn’s use of the term paradigm was ambiguous; using up to twenty-one different meanings (Masterman, 1970 cited Wainwright, 1997), his landmark publications marked a general movement away from quantitative positivist and post-positivist research towards a new *second* paradigm, which embraced qualitative research methods. As with many other disciplines this shift was experienced - though not wholly - in nursing (see Heath, 1998).

However, in relation to nursing knowledge, Robinson (1992) challenged the use of the term ‘paradigm’ (as described by Kuhn), describing it as an “inappropriate distraction” (p.637), on the basis that nursing was neither a ‘mature’ nor ‘normal’ science, which required diverse forms of knowledge that could not remain true to a single paradigm. This, in a sense, was supported by Booth *et al.* (1997, p.807) who stated that nursing, “is rendered scientific by the fact that it shares fundamental features common to all sciences.”

Subsequently, the nursing literature of the 1980s was littered with nurse theorists debating the pros and cons of paradigms. The heated debate was embraced within the question of whether (or not) nursing was an art or a science. The debate continued for almost two decades (Thorne *et al.*, 1999), and was dominated by discussions about



quantitative versus qualitative approaches to research (e.g. Jones Porter, 1988). Many theorists advocated a particular paradigmatic approach that should guide knowledge generation through research (see Wainwright, 1997) with some, particularly qualitative researchers, speaking out strongly in favour of purity (e.g. Morse, 1991). In time the debate dissipated, and most researchers now acknowledge that both quantitative and qualitative approaches to knowledge are relevant (Thorne *et al.*, 1999). Indeed, some authors support the need for research to be conducted in multiple paradigms (e.g. Dzurec, 1989) and critical multiplism has been advocated as a unifying research methodology (Letourneau and Allen, 1999).

From the 1980s onward qualitative research gained momentum in nursing, resulting in a greater focus on the needs of patients and clients with a fuller understanding of their view of the world (Stolley *et al.*, 2000). Nursing practice shifted from traditional approaches that focused on task-orientated care, towards a person-centred approach. This was manifest in the proliferation of nursing models, which attempted to provide holistic frameworks to guide nursing practice (e.g. Neuman, 1982; Orem, 1985). Around this time, nurse researchers adopted the qualitative paradigm almost uncritically, transferring to its methods *en masse*. Whilst this movement was understandable, it left nursing, as an academic discipline, wide open to criticism. For, a discipline does not come of age until it is able to develop its own methods of knowledge generation. What nursing has begun to do is to adopt and integrate previous ideas in the construction of new knowledge for practice, as opposed to simply accepting received wisdom (Belenky *et al.*, 1997).

At the same time similar developments were taking place internationally. New models of nursing were developed based on experiential knowledge and utilising the experience of other academic disciplines (e.g. Newman, 1986; Parse, 1981; Rogers, 1986).

As nurses began to gradually reject the dominance of the medical model they sought new ways of nursing that emphasised greater professional autonomy and power that promoted person-centred care. Two influential texts, during the 1990s, were *Nursing as Therapy* (McMahon and Pearson, 1991: 1998) and *Nursing Intimacy* (Savage, 1995). Of particular note, was Salvage's (1990) 'new nursing', which emphasised an

ideology of partnership between the nurse and the patient. Several strategies were developed that promoted this partnership, most notably primary nursing (Porter, 1994). As a theoretical model, it was developed by Manthey (1980). However, as a care delivery system it was pioneered by Pearson (1988) in the UK. His work developed notions about the nature of nursing and epitomised the professionalism of nurses at the heart of healthcare. It marked a movement away from nurses' application of (directed) curative medical knowledge to a model of clinical nursing expertise. Primary nursing also gained some ground in intensive care nursing following the publication of Manley's (1989) Master's thesis.

From the 1980s onward, the feminist movement in nursing was also very influential. In the bigger context, it challenged the dominant discourse of masculine consciousness, with its positivist ideals of universality, scientific objectivity and rationality (Keller, 1990) and emphasised subjectivity, lived experience and contextual analysis – much as I do, in the following narrative. Feminist theorists argued that traditional knowledge had been given a high status in society and this type of knowledge had been created to serve male interests (Hagell, 1989). Feminist research called for innovative methodology to correct the negative perception of subjectivity and interpretation, and distortion of female experiences (Sigsworth, 1995; Webb, 1993).

The “staggering” progress of nursing research during the 1980s provided reassurance and confidence that nursing practice was grounded in ‘scientific’ knowledge (Kim, 1993). However, throughout the late 1980s and early 1990s nurse educationalists and theorists were recognising a theory-practice gap in nursing (e.g. Lewis, 1988). The claim was that whilst knowledge was being generated, it was not being applied to practice. As a result, the pre-registration nursing curriculum was completely restructured. Traditional schools of nursing were replaced by academic institutions, delivering a knowledge-based curriculum (*Project 2000*), which aimed to produce a new breed of practitioner, described as a ‘knowledgeable doer’ (UKCC, 1986) who could effectively respond to the complex demands of a changing health system (Fulbrook *et al.*, 2000).



Nursing, by virtue of its context, is a practice-based discipline. Culturally it has now advanced to the point where it considers research in terms of its application to practice (Stolley *et al.*, 2000). In this sense of understanding, *pragmatic* epistemology emphasises the utility of knowledge. However, one of the problems, claimed Rolfe (1998a), is that nurse researchers have failed to distinguish between (clinical) research that relates directly to practice, and (theoretical) research designed to generate and test theories. It is this that is at the heart of the theory-practice gap. Although it might be argued that the goal of all nursing research is to improve practice, it is an indirect process and much of the knowledge is never translated into practice (Rolfe, 1996a). If it is to make a difference to practice, clinical research must be practitioner-based (Rolfe, 1998a).

Increasingly greater significance was given to paradigms in nursing, attaching a contrast of difference between qualitative and quantitative research approaches (Paley, 2000). Currently, the two main approaches to nursing research are described as post-positivist and interpretive (Closs & Cheater, 1999). However, it is also argued that the question of which research method to use should always be a pragmatic one (Booth *et al.*, 1997). Several authors have lamented that nursing knowledge development has not been well served because it “rarely finds its way into clinical practice” (Geanellos, 1997 p.13), whilst other authors have highlighted the ‘gap’ between researchers and practitioners. For example, in relation to their study of practice development, Clarke and Procter (1999) noted that practitioners, “found themselves marginalised by the research world” (p.980). On the other hand there is concern that the government’s recent emphasis on research is part of a drive to control clinicians through policy whereby knowledge and evidence is ‘engineered’ into practice (Rafferty and Traynor, 1999).

Beyond the paradigm wars it would seem that the debate about whether research should be conducted within a particular paradigm (or not) has been largely subsumed by a new practical approach to the use of knowledge i.e. practice development, which was marked by an expansion of nursing development units in the early 1990s (Gerrish, 2001). In 1997, in relation to critical care nursing, practice development was highlighted as a ‘growing and significant movement’ (Manley, 1997). Within this context, the focus is more on the end product: a change in practice, and the process by



which it is best achieved. Thus, there has been a change in the emphasis on nursing research and there has been a movement away from knowledge generation through primary research, towards a culture of quality improvement through research utilisation. This change of emphasis is explained by Unsworth (2000) who cites Kitson's (1994) description of practice development (my italics):

“A system whereby . . . change agents work with staff to help them introduce a new activity or practice. *The new practice may come from the findings of rigorous research; findings of less rigorous research; experience which has not been tested systematically or trying an idea out in practice.* The introduction of the development ought to be systematic and carefully evaluated to ensure that the new practice has achieved the improvements intended.”

Current developments in healthcare policy have directed a move towards the adoption of the principles of evidence-based practice, which requires a shift towards practice development (McCormack *et al.*, 1999). This means that the *researcher-practitioner* must engage in the ‘messy world of practice’ (Schön, 1991), which does not sit comfortably in any paradigm, and nurses have begun to realise the impracticality of linear approaches to change management (Kitson *et al.*, 1998). Action research (Lewin, 1946), which may employ triangulation of methods (and cross paradigms), has begun to gain momentum (although some authors have described this movement as a *new paradigm!*) (Meyer and Batehup, 1997). It is appealing to nurses because it is problem focused and involves change aimed at improving practice (Hart and Bond, 1995). However, there are concerns about its methodological rigour, although these are based largely in the positivist tradition (Badger, 2000).

The need for rigour is necessary for any research approach and the lack of ‘scientific’ standards has been a frequent criticism of qualitative research (Pinch, 1996). In the modern world of healthcare, medicine is still the dominant profession and, since its approach to theory development remains rooted in positivism, it has been difficult for qualitatively generated research knowledge to gain acceptance – and even more difficult for so called *new paradigm* approaches, such as action research. However, government policy within the modern NHS now promotes client-focused healthcare



and, as such, qualitative approaches are gaining respectability (Dixon-Woods & Fitzpatrick, 2001).

Returning to the topic of evidence-based practice, the premise is that the basis for practice should be an identifiable and sound knowledge base. Often this presents a very difficult challenge for nursing, since within the traditional hierarchy of evidence [which places experimentally generated knowledge at the top of the taxonomy (Humphris, 1999)], there is either no *research* evidence available, or what is available is controversial. Thus, it is often not possible to base nursing practice on traditional forms of 'evidence' and nurses must fall back on either experientially gained knowledge, or that of recognised 'experts' in their field.

It would be naïve to attempt to develop all practice according to an evidence-base, at the expense of clinical expertise (Greenhalgh and Worrall, 1997). What is important, in this context, is that all forms of knowledge are considered as legitimate evidence and that none are weighted preferentially, or hierarchically, according to a particular paradigmatic stance. If knowledge is to be weighted, then arguably it should be according to its ability to inform a unique practice situation i.e. its pragmatic value. Where nursing knowledge is weakest, in terms of its availability within the public domain, is with respect to clinical expertise located in experience. This means that nurses need to develop ways of articulating their personal knowledge of practice situations so that they become ways of knowing that are accepted as 'mainstream'.

Clinical expertise is *tacit* knowledge; it is a type of knowledge that is not easily articulated or recorded. Carper (1978) described four 'patterns of knowing' in nursing: empirics, aesthetics, ethics, and personal knowledge. Arguably, the clinical expert has a high level of knowledge in each of these areas – and the majority of it would not be research-based. Knowledge may also be classified according to its scientific or practical extraction (Rolfe *et al.*, 2001). However, there is no prescription for knowledge that describes what and how much of it should be applied to an individual clinical situation. In fact, when nurses use knowledge in practice, it may not be a conscious, rational process at all (Benner *et al.*, 1999). Rather it may be a set of 'rules of thumb' that an individual nurse has developed for herself that guide her practice, which have been learned over time (heurism). There are also times when a

nurse consciously theorises about her practice, evaluating a situation against her knowledge base, and making a decision about what to do in this particular case – what Schön (1991) described as *reflection-in-action*. As stated above, what is vital is that nursing develops methods of articulating all forms of knowledge, and that evidence is assigned value according to its ability to inform practice. What I am arguing against is formulaic practice, whereby there is an algorithmic-type approach to knowledge generation through research wherein “knowledge and evidence will no longer be left to professional discretion but actively managed and mediated” (Rafferty and Traynor, 1999 p.463). This does not mean that I am implying that the research process should be unstructured.

There are many questions of a human and holistic nature that cannot be addressed using positivist approaches. For example, if a nurse wanted to access evidence about how to ‘break bad news’ to the mother of a young child admitted to an intensive care unit following a road traffic accident, who was not expected to survive, there is unlikely to be a randomised controlled trial to inform her practice (since experimental research in this area would be unethical). In other words, there would be no (traditional) evidence to advise the ‘right’ or ‘wrong’ way to do it, since by its very nature, it relates to an individual human behaviour. On the other hand, there might well be qualitatively generated research available, which could help to *guide* the nurse’s practice, perhaps making her aware of some of the issues, which she might not otherwise have considered, that the mother might be facing. For example, a phenomenological study, in which several mothers in similar situations were interviewed, would probably yield some useful pointers. However, it would still be insufficient to provide rules for the nurse’s practice. What might be even more valuable to her would be to draw reflexively upon her own past experiences. In particular she is likely to draw on her ethical and personal knowledge. Although, this would be very difficult if she was a novice nurse, with only a few experiences to refer to.

“The elusiveness of conclusive evidence is something that students and researchers are familiar with” (Phelan and Reynolds, 1996 p.1). The above scenario, to some extent, illustrates the inherent problem of basing nursing practice on traditional understanding of ‘evidence’. It challenges current thinking about the nature of



evidence, and its ability to provide generalisable 'rules' for practice. Because human behaviour is not predictable it is not possible to develop knowledge that is applicable to all contexts. However, it is possible to generate *general* knowledge that *may* be relevant to many human situations.

Sharp (1998) makes a helpful distinction between empirical and theoretical generalisability, explaining that empirical generalisation is about making a claim that knowledge generated from a case sample is typical of the population from which the sample was drawn. Normally such conclusions are based on calculations of statistical probability. The failing of empirical generalisations is that they do not, in themselves, enable the researcher to develop explanations that describe the relationships between variables. The statistical relationships can only be made sense of through further explanatory theory. Basically, theories specify the relationships between variables, which when reduced to its crudest level means that theoretical explanations deal with 'why' questions, whereas empirical generalisations deal with 'what' questions (Sharp, 1998).

“Theoretical explanations, by their very nature, also entail a process of generalization therefore. But in this case, generalizations are made on the basis of having identified some general principle concerning the phenomenon in question, rather than being based on the typicality of the sample in relation to the a parent population.”

(Sharp, 1998, p.788).

When it is accepted that theoretical generalisation is not dependant on representativeness for its validity, then the real value of other forms of knowledge will be properly appreciated.

“Empirical research methods have traditionally been recognised as the only legitimate (and the only 'scientific') method for generating knowledge. However, this view has been challenged by theorists and researchers who insist that methods for developing all areas of knowledge are essential to human science disciplines such as nursing and, therefore, must be equal in terms of legitimation. When methods for

developing all patterns of knowing are equally recognised, *the view of what constitutes 'scientific research' is changed and expanded significantly.*"

(Powers and Knapp, 1990, cited Rolfe 1999a, p.296).

It is clear that there is a place for experimentally derived research knowledge in nursing; there are many uses. For example, a nurse might want to trial a new intervention, such as a 'smoke-stop' health education programme, which has not been used before in a particular clinical setting. She could set up a randomised controlled trial in which matched groups of patients were assigned to either an 'intervention' or a 'control' group. After a period of time, by measuring pre-determined outcomes and comparing the two groups, she may be able to generate statistical evidence that supports her use of the programme. Another example would be where there is a need to trial a new measuring instrument, such as an electronic blood pressure monitor. This would need to be tested against a 'gold standard' measurement tool, and the results compared. Neither of these two practice problems could be suitably addressed using qualitative approaches. However, neither of the two examples would have any value for practice without an explanatory theory that describes the relationships between the variables studied.

Essentially, what I am suggesting is that whilst empirical knowledge is vital, much of the knowledge that nurses use for their practice is tacit. And this knowledge can often only be uncovered through reflective inquiry. Reflective and reflexive inquiry offers methods for practitioners to relate personal stories, perceptions and perspectives about phenomena within their sphere of practice. Analytical interpretation of these insights enables the personal knowledge gained through individual experience to surface.

The following section is both about the narrative method itself, and my use of it to develop my perceptive understanding about the nature and value of knowledge for critical care nursing practice and my role – in this context - as a researcher-practitioner. In order to develop the final narrative I have employed a process of deconstruction and reconstruction through active reflective inquiry. I have engaged in this process on two levels. In the first instance I have focused on a series of publications to both reflect on my thinking at the time, and to make sense of it now.



This is, in effect, what Schön (1983) described as ‘reflection *on* action’. This involves a selective process of remembering, which is itself a subjective event (Ochs and Capps, 2002). On the second level I have engaged reflexively, that is, in the present, through the deconstructive/reconstructive process of narrative writing. This has enabled me to ‘make sense’ of the development of my own theorising over an eleven year period of publishing in the critical care and nursing literature, and to set it in the context of ‘what I know now’. This is, by its very nature, an interpretive process which:

“. . . encompasses the description of findings in light of disciplinary knowledge and demonstrates the value of the findings for the advancement through theory development, research, and, where pertinent, *practice*”.

(Parse, 2001b, p.22, my italics).

In my transformation from practitioner to researcher-practitioner the process of movement to a higher level of understanding of knowledge and practice would have remained implicit within my description. The interpretive process of narrative however, has enabled my progression to be made more explicit.

### Narrative Inquiry

The use of narrative as a research method is gaining increasing recognition in nursing (Sandelowski, 1991) and has been of interest to psychologists for around fifteen years (McCance *et al.*, 2001). Jones (2003) even describes it as a *fait accompli* in social research, proclaiming the use of biographical methods in healthcare research as “ground-breaking”. Indeed, it is proposed that much of the knowledge that (individual) nurses possess has been related through story telling. Whilst some positivist scientists vehemently challenge the rigour of story telling as a research method as: “savage, primitive, underdeveloped” (see Sarup, 1993, p.136), on the basis of its subjectivity and lack of generalisability, it is regarded as a legitimate interpretive research method (Koch, 1998); a worthy place of exploration for nursing inquiry (Vezeau, 1994).

It is an interesting irony, which is noted by the postmodern thinker Lyotard (see Sarup, 1993), that positivist critics of narrative can only make the findings of their own research known through narrative method. Research texts present the story of the research process, which is made available to people, as contestable claims about the world, to be read and re-read. Thus, the presentation of all research findings is a narrative construction (Fox, 1999).

Essentially the narrative method is story telling. Although some theorists would argue a difference, often the terms *story telling* and *narrative* are used interchangeably (Frank, 2000). Narrative suggests an underpinning structure to story telling, and the process of narrative analysis enables structure (that the storyteller may not have been aware of) to be developed (Frank, 2000). Boje (2001) makes a distinction between story telling and narrative, noting that traditionally narrative has been viewed as an elite method that stands above story telling. Whilst he acknowledges the ‘organising’ process of narrative, which adds ‘plot’ and ‘coherence’, he also advances the concept of the *antenarrative*. An antenarrative is essentially a story, but what Boje is saying, is that in the telling of the story the storyteller necessarily organises his/her story in a way, which for them, makes sense. This pre-narrative stage is part of the process of narrative, but at this point it is told as an account of incidents or events without a proper plot sequence or coherence.

Boje describes antenarrative as “deconstruction in action”. He draws heavily on the work of Derrida (1999), who states that deconstruction is neither a philosophy nor a method. Rather, it happens. Thus antenarrative (story telling) is itself a process of deconstructive interpretation. Narrative is post-antenarrative, in that the antenarrative(s) has been organised into a beginning, middle and an end, giving it coherence (Boje, 2001).

In the process of writing this narrative, I have moved through several stages of deconstruction before finally arriving at *this* reconstruction. The process of writing about, and reflecting upon, my experiences and the development of my thinking as a researcher-practitioner have enabled plot and coherence to develop. For me, this process has also enabled what Polkinghorne (1988) refers to as pragmatic insight. In other words, I have shaped my thinking in a way that has practical meaning for me:



my practice, my profession, and about original contribution to knowledge through PhD.

In the process of deconstruction/reconstruction I have moved from antenarrative to narrative. This process of engagement and refinement, through reflection on events, is referred to as *active inquiry* (Vezeau, 1994). This is a retrospective 'sense-making' activity in which many possible meanings may be synthesised (Weick, 1995).

In a sense, my narrative can never be complete because it is always being deconstructed. Even as I write I am forming and re-forming my thoughts, opinions and values. For, as noted by Boje (2001), people are always in the middle of living their storied lives. Similarly, deconstructivists would argue that every reading of the narrative is itself a deconstruction.

Wiltshire (1995) maintains, as does Boje (2001), that stories are casual and informal and require further conceptual and structural development to become narratives. A narrative requires a plot to make it meaningful (Czarniawska, 1997). Furthermore, part of the work of developing coherence in narrative is to construct a sequence of events *in time* (Vezeau, 1994) and White (1987) contends that narrative theory transforms events into historical facts that function as elements of a completed story. The plot, in the context of this narrative, is the unfolding of the story about *my* understanding of the nature and value of knowledge for critical care nursing practice: when the storyteller and narrator are one, it is described as 'personal experience' narration (Boje, 2001). In order to achieve coherence I have constructed a chronological sequence of events; this is often described as 'formal' narration (Boje, 2001).

There are many ways to tell stories, for example through diary keeping or reflective writing. It can be understood as a form of reflection upon an event (Ricoeur, 1986 cited Aranda and Street, 2001). In the context of this chapter, the 'event' (see below) is the development of my own theorising about the nature and value of knowledge, traced over an eleven year period of publishing in the critical care and nursing literature.

Narrative can take on many forms, and may be etic or emic. However, even ethnographers, who immerse themselves in a particular culture, cannot completely shed their 'other' self, and their narratives are inevitably shaped by their previous knowledge and experiences. Because I am tracing a personal journey, this narrative is written in the first person, as advocated by Webb (1992) and Hamill (1999). The fact that I feel the need to justify writing in the first person is worthy of note, since it is testament to the dominance of positivist tradition, and also speaks to the dominance of tradition in presenting a doctoral thesis, which is in direct contradiction to the theme that I develop throughout this work: the equitable value and valuing of nursing knowledge.

Postmodern discourse, of which narrative is part, seeks to move beyond the often-destructive take on the world that rules bring. As Lyotard (1984, p.81, cited Freeman, 2000, p.124) explains of the writer:

“The text he writes, the work he produces are not in principle governed by pre-established rules, and they cannot be judged according to a determining judgement, by applying familiar categories to the text or to the work. Those rules and categories are what the work of art itself is looking for. The artist and the writer, then, are working without rules in order to formulate the rules of *what will have been done*. Hence the fact that work and text have the character of an *event*.”

### *Knowledge and narrative*

The object of narrative is exploration – most narrative does not seek to answer questions, rather it adds understanding of a phenomenon within a specific context:

“It does not, and cannot, offer a definitive position for the reader.” In terms of rigor, assessment is based on the question of, “When is a story a story?” not the determination of, “When is a story truthful?” (Vezeau, 1994 p.58).



Sandelowski (1991) explains that narrative truth is distinguished from the truths of formal science because it has its emphasis on “the life-like, intelligible and plausible story” (p.164). She goes on to clarify that stories should be expected to change from telling to telling and thus the idea of validating them empirically is “completely alien to the concept of narrative truth” (p.165). Narrative writing does have rigour, but it lies in its reflexivity. Thus reflexively, in the context of *my* narrative, truth is an important necessity for me and *my* judgement of *my* credibility: a true story allows me to focus on *my own* life experience (Gadow, 1990). Story telling invites me to not only include personal knowledge, but to base my whole story on personal knowledge. Story telling, by definition, is personal and, “any story that prevents my voice . . . from entering is dangerous and suspect” (Vezeau, 1994 p.59). A ‘true’ story relates obvious facts and themes, but its meaning will always be individually interpreted and *correct*.

The concept of ‘understanding’ merits further exploration. For example, my understanding (as the narrative writer) and your understanding (as the narrative reader) are not the same. For, in the process of reading, you are already deconstructing my words. As Derrida (1999) says: it happens. With narrative, there will always be multiplicity of interpretations, and it *should* always be able to stimulate debate, and there *should* be disagreement among readers. For in reading it, the reader co-creates it (Vezeau, 1994). This is the postmodern view proposed by Rolfe (1997): once a text has been written it is no longer the property of the writer, and the reader imposes his/her own meaning upon it. As stated above, *all* interpretations – though different - are *correct*. This point is illustrated by Rolfe (1999a), in response to Closs and Draper’s (1998) commentary on his paper. They formed a different understanding of his position because they were judging the value of postmodern knowledge from a positivist’s perspective. However, as Rolfe himself points out, he cannot ‘put them right’ or enlighten them as to ‘true’ meaning, for there is no single objective truth. In other words, all readings are truths, in that they are all true interpretations.

This view is in contrast to the post-positivist view of knowledge, which is based on consensus. Definitions of knowledge take on many forms – indeed, this statement is central to my thesis - and historically, the methodology of human science has changed much (Polkinghorne, 1983). In fact, “rules toward ‘correct’ understanding are a

posture in defense to positivism as the dominant paradigm of knowledge generation” (Vezeau, 1994 p.53). Knowledge and power are inextricably linked. Lyotard suggests that they are simply two aspects of the same question: who decides what knowledge is? Who knows what needs to be decided? (Sarup, 1993). Furthermore, those with the knowledge assume positions of power and define and regulate what constitutes valid knowledge in a self-perpetuating cycle (Foucault, 1980). The positional power and agendas of academics that place themselves on what Schön (1983) refers to as the ‘high ground’, is an important consideration for me as a narrative writer for, as stated above, I must remain true to my story.

Returning to the work of Lyotard and expanding further, in relation to the rules of ‘correct’ understanding, he contends that whilst scientific and narrative knowledge are equally valid, they cannot be judged by the same criteria.

“These rules are specific to each kind of knowledge, and the ‘moves’ judged to be ‘good’ in one cannot be the same as those judged to be ‘good’ in another . . . It is therefore impossible to judge the existence or validity of narrative knowledge on the basis of scientific knowledge.”

(Sarup, 1993 p.136)

Positivists and post-positivists refer to bias in research. In the context of narrative, this concept is redundant, because we all have interests and prejudices that relate to the subject matter. Interest-free knowledge is logically impossible and attempts to produce value-free science are increasingly being abandoned (Lather, 1986). What is important, is that I, as the narrator, am not prejudiced by external factors – or inappropriate ‘rules’ - that force me to falsify my writing.

The inequalities and oscillations of power, between the researcher and the agenda of the academic discipline, were brought sharply into focus by Shah (1999 p.308), who wrote about the effect of power plays on his research in a geographical setting:

“There seemed to be three spheres in which the power plays transcended my research and delicately vibrated, often to blind me to a field of vision which I feel I must uncover here. First was in the choice of my topic; the

second in the process of the research; and the third in writing the text and submitting it to the examiners' gaze.”

This power play between writer and ‘examiner’ is also described by Lees (2001), in the context of writing a paper about reflexive action research within counselling and psychotherapy. Reviewers of his first draft advised that references to positivism should be “edited down”, which he subsequently did. It is difficult to say with any certainty whether the reviewers prejudiced his writing or influenced his thinking in such a way that he altered his point of view in the light of new knowledge. What is clear, is that the reviewers asserted their agenda. What they could have done was to publish his first draft, including his “polemic against positivism”, so that readers of his work were able to form their own interpretation, understanding and opinion of his position.

In expanding our understanding of what we mean by ‘understanding’ it is necessary to consider the work of Dilthey, a turn-of-the-century post-positivist. He proposed the notion of *verstehen*, a German word commonly translated as meaning ‘understanding’. However, in this context, the emphasis is very much on perception and its meaning. As such, *verstehen* requires a broadened awareness of perception, which acknowledges multiple realities and furthermore, is constantly changing. Predominant in this view is that the integrality of ‘knower’ and ‘known’, thus *verstehen* is resistant to purely logical analysis (Vezeau, 1994).

The acceptance of *verstehen* as a valuable and reliable form of knowledge is in direct contrast to positivist assumptions (or rules) of objective knowledge. Nursing practice, however, embraces *verstehen*. For example, the way that nurses act, when they interact with patients/clients, is the product of a constantly changing interaction between the knower(s) and the known. In this way, every nursing interaction is a unique event. Furthermore the meaning of an event, within the perception of different individuals, for example nurse, patient, carer, independent observer will take on different characteristics – or multiple realities.

Narrative is not new to nurses. It has always been a way in which they explore the shared world of patients (Vezeau, 1994). The challenge for nurse researchers is to



develop methods of inquiry that capture the ambiguity and personality of patients' experiences in a way that transforms them into nursing knowledge that can be used in practice.

Vezeau (1994) contends that the primary struggle for nursing has been to develop a knowledge base for nursing care that does not sacrifice regard for the individual. And it is this struggle that has led to a questioning of the philosophical basis of the methods of inquiry employed by nurse researchers, whereby a balance between the objective and the subjective is obtained. The inclusion of *verstehen*, which expands the human dimension of nursing knowledge (Bartol, 1989), helps to achieve this balance. Indeed, the ultimate purpose of *verstehen* is utilitarian, in that it leads to understandings and explanations that support social change (Vezeau, 1994).

### The Transition to Researcher-Practitioner: Learning to Understand the Nature of Knowledge

This is where my narrative begins. In telling my story, and engaging reflexively in its interpretation, the narrative construction has surfaced. Coherence is developed through the chronological and thematic ordering of the narrative, which in turn has helped to shape the plot (my understanding of knowledge – and its evidence-base - for practice). Of course, this narrative is only a partial view, for there are many other sub-plots that have shaped my understanding, and many other plots that have impacted on my transformation from practitioner to researcher-practitioner.

As noted earlier, intensive care is necessarily a high technology environment. And, in my experience, critical care nursing is usually regarded – by those who have never worked there - as an advanced form of technical caring. Whilst there is a large amount of mechanical equipment present in an intensive care unit, often utilising state-of-the-art technology, nurses who *do* work there regard it as a highly humanistic environment in which holistic care is genuinely possible (Hudak & Gallo, 1994). Critical care is also an area where nurses work closely and collegiately with their medical colleagues, physiotherapists and many other allied health professions. Although described as a specialty, it is also an area where there are few limits to the type or age of patients who are admitted. Close relationships are developed with

patients and relatives, and whilst patients are admitted to intensive care in a biological crisis their relatives enter in a state of psychological crisis (Roberts, 1986). As such, the nature of knowledge that is required to inform nursing practice is both broad and in-depth, and derived from many sources.

My own experience as a critical care nurse spans sixteen years. During this time I have worked in intensive care predominantly as a practitioner, then as an educationalist, then as a researcher, and finally as a researcher-practitioner. I have been engaged in shaping critical care nursing in all of these areas and at all levels, both nationally and internationally. As I have progressed through my career, publishing along the way, it is noticeable that my publications have mirrored the changes that have taken place in nursing generally, and in relation to the application of research knowledge. Moreover, they reflect the transforming progress of my own understanding – and valuing - of knowledge for practice. As I have advanced personally, as an intensive care practitioner, I have also developed a heightened sense of awareness of the value of different types of knowledge – and therefore different levels of evidence - that are relevant to critical care nursing. Whereas, at the outset of my career I was very influenced by positivist tradition, I am now much more influenced by critical thinking, and the importance of knowledge utilisation for practice development.

Focusing on critical care, the aim of this section of the chapter is to trace the trends of nursing research methodology, utilising my own publications to demonstrate how a variety of approaches to knowledge generation are required to provide the best evidence for informing nursing practice.

When I first started publishing in the early 1990s I was studying for a bachelor's degree. Although in nursing, the structure and content of the degree was traditional and the type of knowledge that it imparted was, in the majority, empirical. At the same time, I was practising as an intensive care nurse, and had about five years' experience. My world of intensive care nursing was fairly traditional, with clear lines of accountability through the nursing hierarchy, and a learned subservience to the dominant *received wisdom* of my medical colleagues. Although intensive care, as a practice environment, was much more conducive to medical-nursing teamwork than

was my experience of ward nursing, it was still medically led and dominated. However, in my experience, it was an area where nurses took more initiative, and where their opinions were generally well respected.

The dominance of the medical model was evidenced in the ways that nurses organised and wrote about their care of patients. When I started intensive care nursing, the care given to patients was based on a two-hourly routine, rather than individually planned, holistic care. And although there was a daily plan for the patient, it was a medical one that was dictated by the consultants on their daily 'grand' round. As such, the aims and objectives of nursing care were determined largely by medical goals, which nurses were expected to observe. By and large, nurses did so unquestioningly. Because the medical model so heavily influenced nursing practice, nursing records reflected this. Nursing notes usually recorded events of the previous shift after the fact, usually utilising body systems as a framework to describe the status of the patient. Typically, physical parameters such as blood pressure and heart rate were recorded, and rarely was any mention made of the patient's psychological status. There was no recorded evidence of a *nursing* plan of care and the nursing process, which was introduced in the 1980s to promote a nursing focus on care (De La Cuesta, 1983), was not used.

Initially I accepted the way of working that I was socialised into. What was normal for my more experienced colleagues was the 'norm' that I adopted. Additionally both my school and nursing school education had been traditional, so that the ways of working in nursing did not seem in any way unusual to me. However, through my studies and reading I began to learn more about holistic care. In particular, I became interested in nursing theories of care, and their application through nursing models. I began seeking new ways of organising nursing care that emphasised the *nursing* dimension of care.

The first article I wrote and submitted for publication (Fulbrook, 1992a) explored the art of nursing, and the role of nursing models. It discussed the importance of 'scientific' knowledge "as a basis of judgement for nursing actions" (p. 42). It also wrestled with the question of whether nursing was an art or a science and related this to the professional status of nursing. Essentially the article was promoting the use of



nursing knowledge for practice and contended that nursing models were one way of ensuring its use. Influenced by the 'art versus science' debates (Kitson, 1993), I talked about 'scientific' knowledge, concluding that, "Nurses must be able to explain the reason for any action they take based upon scientific argument. If the knowledge base is not referred to when making decisions, then the action can have no foundation and should be questioned," and that the essential component for a nursing profession "must be an accepted philosophy for development of the knowledge base" (p. 43).

Basically, I was looking at nursing through a positivist's eyes: deferring to the dominant discourse of the time. I can see this now, although I did not realise it then. I was a relatively junior nurse of limited knowledge and experience, and my pursuit of understanding – which was very important for my confidence as a practitioner – led me to value empirical knowledge; that enabled me to 'get the job done'. I clearly felt the need to justify nursing practice through the identification of its 'scientific' knowledge base. I now realise that there is much that nurses do that is very difficult to explain. And, in modern day 'evidence' terminology, there is only a minority of knowledge that nurses can identify as a 'common' knowledge base. Although retrospectively I can see my view as being somewhat naïve, for nurses at this time, it was an important issue. For too many years, in my experience, nurses had been accused of being emotive in their decision-making and lacking in their ability to justify their reasons for undertaking nursing actions. As demonstrated in Menzies' seminal studies, such as her in-depth case study of a London hospital nursing service (Menzies, 1988), nurses were encouraged to work hard at disconnecting from the emotional labour of caring. This was an important issue in relation to their professional standing, and one that affected their power in relation to medical colleagues. In the early 1990s, there were few nurses educated to degree level, and I felt that there was a general lack of respect for nurses' views.

Whilst recognising that the standing of nurses was related to their knowledge power, I was also exploring ways of working that challenged the medical dominance of the way the nursing care was managed. I was not doing this in order to challenge the medical profession, or even to improve the status of nurses. Rather, I was following a deeply rooted intuition that 'there was a better way.' In the context of teaching, Atkinson and Claxton (2000) described the intuitive practitioner as "responsive". It is

only later (if at all) that the he or she pauses to “figure out” what was going on and why they did what they did. At that time I was influenced by my reading of Pearson’s (1988) views on primary nursing, and Salvage’s (1990; 1992) ‘New Nursing’. What struck me as significant was, how both authors, although viewing nursing from different perspectives, turned nursing 'on its head'; they shifted the nursing focus to patient-centred care.

Working in an intensive care unit (ICU) the nature of my work was necessarily directed by the physical needs of my critically ill patients. However, I felt that the psychological, social and spiritual needs of patients were neglected, and I wanted to develop a way of working that emphasised the holistic care of patients; one that was based on a nursing assessment of needs. Nursing models seemed to fill the void that I perceived.

I began to explore the literature on nursing models, which emphasised a non-medical approach to patient care, and was attracted to a particular model that seemed to meet the needs of intensive care patients. I confess, however, that I was first attracted to the Neuman Systems Model because I thought it was framed upon *body* systems! (Since there was an essentially physical need to care for ICU patients). As I read more widely I discovered that this was not the case and, in fact, the model was based upon *open systems theory*. Nevertheless, having been exposed to the theory, I could see how well it could be applied to ICU.

I set about developing a system of nursing care, based on Neuman’s Systems Model (Fulbrook, 1991a), which was successfully implemented in my own ICU (Fulbrook, 1991b). As a consequence of this work, the approach to care in my unit altered radically. Patients were assessed from a nursing perspective and, whereas only physiological needs were previously considered, the new model promoted psychological, sociological, spiritual and developmental care also.

Although my work in relation to nursing models illustrates the beginnings of a personal paradigm shift, I was also interested in some of the everyday practical tasks that nurses performed. In particular I was interested in temperature measurement. To research temperature-measuring instruments necessitated the use of a quantitative



research approach. It simply would not be appropriate to use qualitative approaches to establish the accuracy of a technical instrument.

The problem that I perceived in ICU was that temperature was measured routinely by a rectal probe, which was inserted for the duration of the patient's stay. This was neither hygienic nor particularly comfortable for patients. The rationale given (by nurses) for its use was that it was the most accurate form of temperature measurement and that oral thermometers were not accurate for orally intubated patients and axilla thermometers were inaccurate. However, when I began to explore the literature I found that there were huge inconsistencies regarding the advice given related to thermometer use and insertion times (Fulbrook, 1993a). I also found some methodologically rigorous American research (Nichols *et al.*, 1966), which although old, suggested that provided axillary thermometers were left in place for an adequate period of time they were accurate.

I developed a hypothesis that if axillary thermometers were placed for a minimum period of twelve minutes they would be accurate. At the time, the nursing literature advised much shorter insertion times and did not support their use because of inaccuracies (Fulbrook, 1993a). I designed an experimental study to determine the relationship between pulmonary artery blood temperature (generally accepted as core true body temperature and used as a 'gold standard' for comparison of other sites), rectal temperature and axillary temperature for adult ICU patients (Fulbrook, 1993b). This was my first venture into the world of quantitative research and statistical analysis.

I learned a huge amount from undertaking the above research; not only about how to research but also about the way that we, as nurses, take for granted most of the things that we do as part of our everyday practice. This was something of an 'eye-opening' experience for me, in that it made me challenge a lot of prevalent assumptions that I had about my own practice. It was around this time that - with the benefit of hindsight - I began to develop a more enquiring mind. In this sense, it marked the beginning of my movement from practitioner to practitioner-researcher. Note that I have placed the practitioner role first. This is deliberate, to convey my sense of professional role. I was still first and foremost a practitioner, and my world-view was shaped accordingly.

The fully integrated practitioner-researcher is immersed in both nursing and research, neither of which is dominant; what is important however, is the 'insider' perspective on practice (Freshwater & Rolfe, 2001). What was driving my research was motivation to discover solutions that had relevance to my practice. In his discussion paper on the practitioner-researcher in nursing, this is precisely the point made by Jarvis (2000). That is, knowledge is legitimated if it is successful in practice: it has pragmatic value.

I also wrote a short article for the Nursing Times summarising my research (Fulbrook, 1994a). Although this was 'only a summary', which would not be regarded as academic by some, because it was not published in a peer-reviewed journal, it was of tremendous value as a means of disseminating the research. The Nursing Times has a huge readership, particularly of practice-based nurses. In this way I was able to impart knowledge and make it available to practitioners who were in a position to change practice. In addition, it reached an audience beyond those who read the critical care literature. Thus, for me, the impact factor of this type of publication is in some ways more important than publishing in more academically prestigious journals. It relates to the case I have made in this thesis for the utility of knowledge. It also speaks to other practitioners about research and power and sends a message to practitioners (from a practitioner) that not all research is conducted in the 'ivory towers' of academics. For knowledge to be used, it must be accessible. This again, relates to my case for pragmatic epistemology as the basis for the science of practice. Hence my reason for including it within the publications that constitute my *body of knowledge* for this PhD.

A few years later the use of mercury-based equipment became very contentious in hospitals due to its toxicity (Blumenthal, 1992) and it was in the process of being banned throughout Europe. My previous research had been based on mercury thermometers, which were now rapidly being replaced by new disposable and electronic methods. However, I was concerned that their rapid introduction meant that the validity of the new instruments had not been rigorously tested. Additionally, in my practice, I occasionally found large differences in temperature when using non-mercury thermometers.



The experience of undertaking my first research project on temperature measurement taught me a lot about design of the research process. Furthermore, I had become a more critical reader of research. Whereas in the past, I would have been inclined to 'skim' read the methodology section of a research paper, it now became the area of greatest interest to me. What my own research had taught me was the importance of rigour in research. I was still, of course a novice researcher, but I had developed a new insight into my understanding about the value and evaluation of nursing knowledge.

In the light of my better developed methodological understanding, I designed another temperature study, to evaluate the validity and reliability of two of the non-mercury thermometers that were commonly being used in intensive care practice at that time: a non-disposable tympanic membrane thermometer and a disposable chemical thermometer (Fulbrook, 1997). My approach to this study was somewhat different to the first. Whereas previously I had approached my research looking through the eyes of a practitioner – I wanted to know that what I was doing in my practice was 'right' - in this study I approached it more as a researcher – I wanted to know that what I was doing in my research was 'right'. As such my reading of the literature, prior to commencement of the research design, focused more on methodology.

Building on my previous study, and developing it further, I used *limits of agreement* (Altman and Bland, 1983; Bland and Altman, 1986) in addition to tests of difference and correlation. By taking this statistical approach I was able to demonstrate how, using only tests of difference and correlation, an unreliable instrument could wrongly be supported as accurate. (In this study there were no statistically significant differences between the measuring instruments, and they were moderately well correlated. However, limits of agreement analysis revealed the wide range of difference of some recorded measurements were outside a clinically acceptable range.)

As a direct consequence of my temperature research I was invited to write a chapter for a major nursing research text. The chapter was titled *Physiological Measurement* and detailed the process of obtaining accurate in vivo and in vitro measurements for the purpose of research (Fulbrook, 1996b). I used examples from critical care nursing to illustrate the processes. The chapter was re-written and updated for the most recent



edition of the text (Fulbrook, 2000). The process of undertaking this work further developed my reading and knowledge around quantitative data collection. This helped further to clarify my understanding of the value of this, and therefore other, types of knowledge.

Although my temperature measurement research was of a necessarily quantitative nature, in my personal practice I was becoming more and more tuned in to the holistic needs of patients and the humanistic side of nursing care. I became less concerned about the technological aspects of care – in which I believe I was already operating at Benner's (1984) *expert* level – and more concerned with wider issues of practice. Benner described the expert nurse as an expert performer who no longer relies on analytic principle, has an enormous background of expertise . . . an intuitive grasp of each situation and operates from a deep understanding of the total situation. I can see now how I was 'letting go' of technical knowledge in terms of its perceived hierarchy, and was moving more into the uncharted waters of new ways of knowing. As I grew in confidence, I felt more able to justify my intuitive knowledge in relation to the care I gave. Paradoxically, the more I learned, the more I realised how little I knew. Whereas as in this past this would have caused me anxiety, now I was more able to tolerate the uncertainty of not knowing. The focus of my nursing care was also shifting from task-orientated care to vision and value-oriented care. This does not mean that I rejected technical caring – far from it – rather it was that I came to embrace the human dimension of caring more fully. I became much more questioning of the accepted ways of nursing practice.

In particular I was interested in patients' rights. Intensive care is a setting in which patients, by virtue of their severe illness or iatrogenic causes such as therapeutic deep sedation, are often unable to communicate. Thus it falls upon their carers and relatives to make important decisions – sometimes life or death decisions – without their participation. This raised important ethical questions for me as a practitioner and marked another shift in my movement as a practitioner, from the 'concrete' world of 'doing' in practice, to ethical and moral consciousness. My experiences as a critical care nurse exposed me to situations – sometimes at the complex level of moral dilemma - that most people do not encounter in their lives. It heightened my sense of self-awareness and prompted questioning of my own value bases. I can see now how,

as a questioning practitioner, I was engaging in a process of intellectual movement, informed by a catalogue of practice events, on several different levels: particular-universal; specific-general; and personal-collective. At the time, I was influenced by the work of Carper (1978) and the concept of *ethical knowing*; the moral component of nursing practice, and I was developing a personal philosophy about the autonomy of patients.

My concern was regarding whether or not we, as a multi-professional team of practitioners were always doing the right thing for our patients. As with an ethical dilemma, there is never a right or wrong way, but perhaps there are some *better* ways? At this time in my career I was confident in my 'technical' practice but was less sure about my ethical practice. Some of the situations that I experienced, such as terminal withdrawal of life-supporting treatment were very challenging, and the lines drawn between allowing someone to die and bringing about their death by action or inaction were indistinct. It raised questions for me about whether we really acted in the best interests of patients. A closely related issue was that of the mental competence of patients and relatives to give consent for medical care.

As stated above, it is difficult to determine the 'right' way forward when it is a matter of ethics. However, I did feel that I, and my colleagues, should be more open about the process of ethical decision-making. One of the best ways to bring issues into the open is to write about them. I published two articles that grappled with ethical issues. The first discussed the medico-legal-ethical issue of withdrawing life-supporting treatment (Fulbrook, 1992b) and the second, the judgement of mental competence of patients and relatives (Fulbrook, 1994b). For me, this was also an important process of writing to learn. As I am doing now, through the construction of this narrative, my engagement with the literature challenged my own thinking and enabled me to clarify where I stood on certain issues.

By raising these issues I was bringing some of the major ethical issues in ICU out into the open. The articles helped to raise the importance of nurses addressing ethical issues in their practice. A major advantage of publication in an international journal (both were published in the *Journal of Advanced Nursing*) was that my 'philosophising' gained worldwide exposure. I received correspondence from many



people. The responses I received and citations in other journals offer a (contestable) form of measurement of the impact of my work. As noted above, with the temperature studies, knowledge that is inaccessible serves no purpose. By placing my views of ethical knowledge in a public domain I was able to raise its consciousness in the minds of a wide readership. There is no way to measure – in ‘scientific’ terms - the impact of this type of work on practice. For me, measurement is not important in this context. If only one person was to read my work but it led to a different way of thinking that improved the care of only one patient, then it was worthwhile.

Although ethical knowledge is rarely research-derived; it is more a product of individual contemplation, it does have a powerful effect on practice. Both papers highlighted the important issue of patients’ rights to self-determination and the role of healthcare professionals and patients and carers in decision-making, both of which are now central tenets of current government healthcare policy (see Department of Health, 2003). The principle question related to how much patients and relatives should be involved in their care. The papers highlighted the traditional paternalistic approach of healthcare professionals and challenged their authority whilst promoting a climate that developed patients’ and relatives’ autonomy.

As I became more experienced in intensive care nursing, I came to realise that there were many dimensions to nursing knowledge, and that the real experts in my field were those nurses who were able to draw on a range of different types of knowledge that they were able to apply to their practice. By the mid 1990s I had accumulated a decade of experience in the field, and was regarded as a clinical expert by many of my peers, because of my role as a critical care educator and my record of publications and conference presentations. It is interesting at this point, to pause, and note the potential incongruence between ‘experts’ who *do* nursing and ‘experts’ who *write about* nursing. For me, it was something of a paradox that the recognition of my expertise may have had little to do with accumulation of my knowledge embedded in practice and my ability to articulate clinical decision-making processes.

At that time, nurse writers in the UK were struggling with the concepts of the clinical nurse specialists and advanced practice (e.g. Castledine 1991a; 1991b; 1994), and there were various initiatives put forward by the United Kingdom Central Council



(UKCC) to develop a hierarchy of nurse levels. It proposed a career development framework – Post Registration Education and Practice (PREP) – based on clinical expertise (UKCC, 1994). A new level of *specialist* practitioner, which defined eight areas of practice, was also described (Fulbrook, 1995a). Although the UKCC promoted the new levels throughout the UK, it only served to blur the distinction between specialist and *advanced* practitioners. This generated a lot of debate in the profession as there were many definitions and descriptions of advanced practice but most of it was based in the North American literature (Albarran and Fulbrook, 1998). There was no UK consensus about what an advanced practitioner was, and the term *clinical expert* was often used synonymously (Fulbrook, 1996a).

Because I was directly affected by the changes in the profession I became very active in the debate, and was a regular speaker at national conferences. I was by this time also an executive member of the British Association of Critical Care Nurses (BACCN) and was very involved in shaping professional issues. The general ‘messiness’ of advanced practice made it an ideal area for research. I developed two research questions: what is advanced practice and, what is an advanced practitioner? (Fulbrook, 1998). I was particularly interested in understanding the views of senior intensive care nurses who were regarded as advanced practitioners by their peers. However, this in itself was a difficult task, since there were no commonly observed criteria for this level of practice (one of the main reasons for needing to undertake the research). This required an emic perspective and “it was a belief in the art of nursing that guided the research method” (*Ibid* p.87). This dictated that I used a qualitative approach since:

“Qualitative research is based on the rationale that human behaviour can only be understood by getting to know the perspective and interpretation of events of the person or people being studied – by seeing things through their eyes.”

(Couchman and Dawson, 1990 cited Fulbrook, 1998 p.88)

I rejected positivist research because ‘hard’ science is characterised by reductionism, quantifiability, objectivity and operationalisation (Watson, 1981). What I wanted to

achieve was *understanding*. I conducted in-depth interviews with eight practitioners whose intensive care experience amounted to over a hundred years.

Although I now recognise that there were some contradictions in the philosophical underpinnings of what I was trying to achieve, the nature of my research questions were essentially interpretivist. In fact, the process of content analysis (of interview data) is basically a reductionist exercise, even though the intention is to preserve the 'richness' of the data.

“There is the danger when using rationalistic research approaches ‘of missing a wealth of rich data of a softer nature; data which will allow interpretive understanding of the phenomenon under study’.”

(Melia, 1982 cited Fulbrook, 1998 p.88)

I returned to the issue of qualitative research in nursing in a more recent publication, which critically analysed interviewing as a research method (Holloway and Fulbrook, 2001).

“Rationalistic methodology is appropriate for research within the medical model but is often unsuitable for research in nursing . . . as it does not focus on personal perception, personal experience and personal knowledge . . . when quantitative approaches are used there is a danger that researchers miss the rich data which assist in understanding the way people interpret and give meaning to what happens to them, and which enables them to justify their actions.”

(Holloway and Fulbrook, 2001 p.539).

Undertaking credible qualitative research on advanced practice added a new dimension to my understanding of knowledge. The process developed within me a positive perception of the value of methods of inquiry that enable researchers to ‘get inside’ the mind of the research informant; and I was able to add the word ‘emic’ to my understanding of sources of knowledge. With the benefit of hindsight, I realise that this was an important ‘turning point’ for me. In the development of my thinking about the source and value of knowledge I became more cognisant of the untapped



practitioner knowledge, which often remains trapped – in terms of being made available within a public domain – within the mind of the nurse.

As well as adding to my repertoire of research knowledge, I learned the skill of interviewing within an interpretive paradigm. However, this also raised questions of process for me, and I was concerned that the ‘neutral medium’ position of the interviewer (which was advised in many of the research texts at that time) may not have been wholly congruent with the interpretive goal of seeking ‘truth’. I much preferred the stance of Mishler (1986) who proposed ‘joint construction of meaning’ between interviewer and informant. This allowed the interviewer to adopt a challenging position in order to arrive at truth. I still feel strongly about this now, and it is a topic that I have returned to more recently (Holloway and Fulbrook, 2001).

I was hoping to develop a framework for advanced practice. Although this was not the overt intention of my research I wanted my research to inform the professional developments at that time. My research raised more questions than answers. However, what was clear was that advanced practice was unique to the individual. At its heart was *clinical* expertise, since without this one could not be an advanced *practitioner*. Informants in the study found advanced practice very difficult to describe, but what emerged was an ‘expert by experience’ who possessed a broad and in-depth range of knowledge, skills and attitudes that were applied to practice (Fulbrook, 1998 p.100).

The role of the intensive care nurse has been a contentious issue for several years, with many debates about the extent of the role, and whether or not it should be expanded into other areas, such as medical practice. And, whilst there have been many innovative roles developed, few have translated into improved patient outcomes (Scholes *et al.*, 1999). The debate was heightened during the 1990s with the reduction of junior doctors’ hours (National Health Service Management Executive, 1991). Building on my previous work around specialist and advanced practice, I contributed to a study that investigated the potential for expansion of the role from the perspective of intensive care nurses (Hind *et al.*, 1999). The study was undertaken in two phases: a qualitative, exploratory first phase utilising focus groups, and a quantitative, refining second phase utilising a structured questionnaire to establish consensus.



The study employed mixed methods to obtain data on the basis that they were the most appropriate means by which to answer the research question. However, some authors would contest this approach, believing that research should be conducted within a single paradigm (Baker *et al.*, 1992; Morse, 1991). As noted elsewhere, this is not a stance that I adopt (Fulbrook, 2003), since it would be in contradiction to the central claim in this thesis. That is, that all knowledge is equally valid, independent of its source or method of data collection. What is relevant is that knowledge has been generated through research that has been critically evaluated as an appropriate process to gather information that informs the practice situation: pragmatic epistemology.

Staffing levels in intensive care have been problematic for many years. Recently, some critical care units have employed health care support workers (HCSWs) in order to supplement the nursing workforce (e.g. Roberts and Cleary, 2000). This has created some concerns within the nursing profession, with some nurses claiming that essential nursing care would be adversely affected.

One of the Dorset and Wiltshire Trusts was interested in employing HCSWs. A research study was commissioned to examine the views of critical care unit staff about the introduction of HCSWs into the critical care unit (Hind *et al.*, 2000). This triangulated study found in favour of their introduction, and was able to develop a framework for their educational development. The unit has subsequently developed a comprehensive education programme that educates staff to National Vocation Qualification (NVQ) level three. This illustrates the importance of utilising the appropriate method to answer the research question. For example, had a single method been used to collect data a less comprehensive programme may have been developed, which may not have had the full support of the multi-professional team. From this study a very practical outcome evolved i.e. an education programme.

Another area in critical care nursing that has been controversial, and which is related to the role of the intensive care nurse, is that of care of the critically ill child. For many years, much to the dismay of paediatric nurses and doctors, 'adult' intensive care units cared for children. Much of the concern was expressed as rhetoric, and there was little evidence available to inform the issue. In 1993 the British Paediatric

Association (BPA) published an influential report (BPA, 1993), which bemoaned the poor state of the paediatric intensive care service. It was initially met with a positive response by the government, which promised action. However, the report was subsequently criticised by the National Health Service Centre for Reviews and Dissemination (NHS CRD) for its lack of a “rigorous and systematic review of the relevant literature and the authors do not clearly distinguish those conclusions that are the result of judgement, opinion and a priori assumptions and those based on research evidence” (NHS CRD, 1994, p.2).

At the time I was a senior nurse working in an intensive care unit that admitted and cared for a substantial number of critically ill children. Whilst my colleagues and I accepted that there were some major issues regarding standards of care for critically ill children, we too were concerned about the lack of evidence (Palmer *et al.*, 1994). I wrote a review article on the issue (Fulbrook, 1996c) and, in response to the call from the NHS CRD, I set about gathering data to inform the situation. I carried out a national survey of general intensive care units, which quantitatively analysed the extent of paediatric admissions to ‘adult’ units (Fulbrook *et al.*, 1996).

Surveys may be used to answer many types of research question and can be either quantitative or qualitative in their nature. Often they are used when there is a lack of information on a large topic. They may be used as a starting point to gather data to inform a larger project. This was the case with a recent international survey in which I collaborated (Williams *et al.*, 2001).

Whilst participating in a Department of Health task force on paediatric intensive care, I became acutely aware of the lack of outcome data from paediatric intensive care. Many paediatric intensive care publications around the time had emphasised the importance of linking the structure and process on of paediatric intensive care to its outcomes, and it was recognised as a major issue by the government:

“Unfortunately, there is little empirical evidence to inform the organisation of services, and what is available ‘suggests that the clinical outcomes for children in adult units and in dedicated paediatric units are similar’.”



[NHS Executive, 1996 p.4, cited Fulbrook and Foxcroft (1999)].

Clinical outcome data had been a problem in adult intensive care units several years earlier (King's Fund, 1989), so it was a problem that I was very aware of. An interesting research question was posed: do critically ill children who are looked after in a specialist (paediatric) intensive care unit have different mortality and morbidity outcomes from those looked after in general (adult) intensive care units (Fulbrook and Foxcroft, 1999)? To undertake a research study to link structure and process to outcomes would have been a massive undertaking, since there are so many variables, which can have an impact on outcome. What I felt I could do was to open up the debate about linking process to outcome. I conducted an extensive literature review to inform the situation. The review (Fulbrook and Foxcroft, 1999) highlighted the need for research into outcomes from paediatric intensive care and emphasised the importance of measuring morbidity outcomes as opposed to mortality. It reviewed a range of outcome measures and concluded that more work was required in four areas: evidence of process and outcome linkages; relationships between technology and quality; reliability and validity of outcome measures; and continued development of health status measures.

Outcome status lends itself to quantitative levels of measuring and benefits from objective evidence to inform medical and nursing intervention:

“Recent demands for evidence-based medicine have made imperative the need for systematic evaluation of outcome. Methods have been developed to assess the effectiveness of current and new interventions, which necessitate measurement of outcome. This relatively new area of research is expected to facilitate evidence-based choices in health care (Gemke *et al.*, 1996) and has been termed the ‘third revolution’ in medical care (Relman, 1988).”

Fulbrook and Foxcroft, 1999 p.44.

Within the mandate for *clinical governance* (Department of Health, 1998) there is a need for health care professionals to make better use of existing evidence, which may be used to inform practice. However, there is another area of ‘evidence’ that is



gaining importance in health care – the so-called ‘user’ perspective - but there is often a dearth of evidence available, and much of what does exist may not be relevant to human caring. The quality and outcome of the services provided to consumers of the National Health Service has assumed a major role in government policy (Department of Health, 2000; 2001). In this respect, the development of evidence-based practice is one of the key policy drivers in the government's *new* health service (Department of Health, 1996; 1997; 1998).

I have published a series of four papers that describe what it is like to be a patient or a relative in intensive care (Fulbrook *et al.*, 1999a, Fulbrook *et al.*, 1999b, Fulbrook *et al.*, 1999c, Todres *et al.*, 2000). Through relating the stories of peoples’ experiences told through interview I was able to gain an in-depth understanding of what it feels like to be on the receiving end of intensive care.

“Whilst it is important in qualitative research, to ensure that the voices of research subject are faithfully represented, it is of equal importance that their views are interpreted within a wider context: what meaning can be given to their experience? The trick is to get the right balance between description and interpretation.”

Todres *et al.* (2000 p.278).

By using informants’ own words, in large extracts, to describe their admission to intensive care I was able to achieve a realism that is often sacrificed – even in qualitative research – for the sake of some form of analytic reductionism.

This realism was achieved particularly in the first three papers (Fulbrook *et al.*, 1999a, Fulbrook *et al.*, 1999b, Fulbrook *et al.*, 1999c), which described a relative’s experience. However, the experiences *were* analysed, but not by for example, content analysis. Instead the issues raised were analysed by experienced health care professionals from a range of disciplines: a form of professional conversation. For critical care nursing, this was a new approach to uncovering knowledge about nursing. Kim Manley, editor of *Nursing in Critical Care*, wrote in her editorial:

“. . . innovations such as Paul Fulbrook’s extended interview of an intensive care nurse whose husband received intensive care have begun to pave the way for greater dialogue.”

(Manley, 2000a, p.6)

The fourth paper in the series described and analysed one person’s experience of being an intensive care patient (Todres *et al.*, 2000). She was admitted to intensive care on three separate occasions, and described her ordeals during an unstructured, in-depth interview. This time I collaborated with a colleague to analyse the data following a broadly hermeneutic-phenomenological approach. This retrospective approach is consistent with the phenomenological aim of showing the meaning of an experience within an individual’s on-going life history (Giorgi, 1985; Van Manen, 1990).

The final example from my work (Lowe *et al.*, 2001) illustrates that there is no single form of research evidence to inform critical care nursing practice. In my current post as *Clinical Reader in Critical Care* I facilitate a nursing practice development team. The first project that the team undertook was the development of a nurse-led protocol to wean patients from mechanical ventilation. Using Rosenberg and Donald’s (1995) four-stage clinical problem-solving approach, we analysed existing evidence to inform our practice. Some evidence came from research, some from written ‘expert opinion’ and some from our own and colleagues’ experience. What was needed was a variety of approaches to inform the whole picture. In addition to examination and analysis of existing evidence, we also had to design an implementation programme, utilising an audit tool to enable us to assess the efficacy of implementing the evidence in a practice situation.

## Summary

In summary, this narrative for this PhD thesis has laid down a historical, logical and linear path that has traced the line of my work and given coherence to the development of my thinking through my publications, and has provided evidence of my progress. To some extent this has been a contradictory exercise, for my development as a researcher-practitioner has been neither linear nor logical. Indeed, it



is an ongoing process. However, the narrative has enabled me to establish the 'plot' in my story i.e. my understanding of the nature and value of critical care nursing knowledge – in all its evidential forms – to inform nursing practice. This is similar to what a practitioner does when engaged in reflexive inquiry: s/he establishes implicit order through personal dialogue. In a dialogue people from different backgrounds form different assumptions and opinions reactively based upon individual experience (Bohm, 2000).

My personal 'view of the world' has shifted enormously (Fulbrook, 2003). In the early days of my career I was (unknowingly) socialised into a positivist way of thinking about knowledge. My practice was very bio-medically orientated, and I was research naïve. As I studied, read more widely, became more proficient in my practice, and started to research, I came to realise that when knowledge of a humanistic nature is required positivist approaches to theory generation are inadequate.

For a short while I was biased towards interpretivist approaches but more recently I have become convinced that methodological paradigm debates, although they serve a philosophical purpose, are largely irrelevant in the 'real world' of nursing. In the context of developing knowledge for nursing practice I now adopt a pragmatic view – both as a researcher and a practitioner.

My ideas are explored more fully in the concluding chapter. In the following chapter, my body of publications submitted for this PhD is presented.

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## **CHAPTER TWO**

### **BODY OF WORK**

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## **Preface**

The papers selected for this chapter, which constitute my body of work, have been chosen to demonstrate evidence of my contribution to critical care nursing knowledge. They have been approved for inclusion in this PhD thesis by Bournemouth University Research Degrees Committee (see *Prima Facie*; Appendix 2).



# The application of a nursing model to intensive care: Planning phase

Paul Fulbrook

**This paper describes the preparation necessary in order to implement a model of nursing in an intensive care nursing setting, and discusses seven key questions which should be addressed when undertaking a project of this nature. A triphasic framework based on the author's own experiences is offered as a planning guide for nurses wishing to adapt a model for use in their own clinical practice.**

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The six-bedded intensive therapy unit (ITU) at Queen Alexandra Hospital, Portsmouth caters for a wide range of patients whose medical problems include trauma, head injury, major abdominal, thoracic, arterial and maxillofacial surgery, metabolic disorders and acute renal failure. The ENB 125 (Intensive and Coronary Care) and ENB 920 (Principles of Intensive Care) courses are well established, and the ENB 125 students spend a large proportion of their clinical allocation in the ITU. The unit is staffed by a total complement of 28 nurses ranging from D to G grades. Nurses are accepted into the ITU with little or no ITU experience and their expertise is gradually developed until they become competent practitioners.

Until recently a nursing model had not been used in our ITU, nor had the nursing process been implemented. This paper accounts for most of the discussion and reading which necessarily took place before we were able to decide upon an appropriate model for implementation, and outlines the planning approach we took.

## Time

Time is a major concern when considering the application of a model in ITU: because of the continuous stream of life-threatening and unpredictable problems to the patient the documentation involved ideally needs to be minimal or it will not be completed.

The time factor has led many ITUs with adapted care plans to use large sections of core plan. The overwhelmingly physiological nature of problems probably accounts for the reason why many units do not apply a model to their nursing philosophy, and evaluate care based on body systems. One could argue that many models e.g. Roy<sup>1</sup>, Roper et al<sup>2</sup> encompass physiological needs perfectly adequately. For nurses not to apply a model in ITU would therefore seem inexcusable.

In an area where problems change with such rapidity, however, implementing the nursing process can seem a daunting prospect<sup>3</sup>.

## Holism

The current holistic philosophy in nursing regards a person in terms of human science rather than as a sum of the bio-medical,

psycho-social, and cultural parts<sup>4</sup>. The family in ITU is therefore receiving greater consideration than ever before.

When a patient is admitted to ITU the family are in a crisis situation. Their response and adaptation to this crisis will depend greatly on nursing recognition and intervention. The nursing response will rely greatly on having a shared unit philosophy of care.

## Key questions

When contemplating the application of a model of nursing to clinical practice several key questions<sup>5</sup> need consideration (Table 1). All of these questions should be carefully thought through and planned before any conceptual model can be implemented in the clinical area.

**Table 1.**

- i) Is the nursing practice environment conducive to a nursing conceptual model?
- ii) Which nursing conceptual model will serve as the guide for nursing practice?
- iii) What outcomes are expected from using the nursing conceptual model?
- iv) Who will use the model?
- v) How will nurses be prepared for using the model?
- vi) How and when will goal attainment be evaluated?
- vii) What financial resources are available to support the project?

## The environment

The questions asked include other health care professionals who may be affected by the introduction of a model, the current method of delivery of care, the type of patients for whom the model will be applied, and the time factor.

In ITU the emphasis is on a team approach. Some argue that the method of delivery of care is primary nursing (though probably not in the conventional mode, which is currently very popular). In our ITU primary nursing was not the vogue and we had a loose team approach. The patients were cared for on an 'ad hoc' basis with much care directed by the senior nurses and the doctors. Patient problems were not identified in any structured manner nor was there a logical framework for assessment and evaluation of nursing actions. A report summary was compiled at the end of each shift by the nurse looking after the individual patient. Thus the patient's various needs were prone to differences between shifts and between nurses.



With such a system goals inevitably vary and communications regarding plans and priorities are weaker. Anticipated needs may not be identified. The obvious consequence of such an approach is that 'team' care is inconsistent.

Families have a profound impact on the critically ill patient's response to illness. Increased nurse-family interaction has the potential to augment patient well-being during the acute and rehabilitative stages<sup>6</sup>. A recent study compared ITU nurses' with ITU families' perception of patients' needs, and concluded that nurses should focus on the whole family rather than the patient alone. The positive relationship between social support and patient recovery would thus be demonstrated<sup>7</sup>. A carefully chosen model will enhance and promote such interaction.

Many immediate problems are physical, but this does not mean that psychological problems should assume secondary significance. The model chosen for ITU must be flexible. It must be capable of expanding and changing in the areas of need most important to the individual patient e.g. psychological needs following attempted suicide.

### Which model?

The model chosen should ideally have concepts agreeable with the current nursing beliefs and philosophies. If the nursing behaviour suggested by the model is inherently different from that already in existence then it is likely that resistance will be met to the change<sup>5</sup>.

If the language used is difficult to understand and interpret then resistance is more likely — it needs to be presented in terminology we can all understand!

In summary, the ideal model for ITU should have a holistic concept, should be adaptable to allow predominantly physiological needs to be fully met, should not require lengthy documentation, should have reasonably easy to understand concepts, applied in an acceptable language, and should encompass the nursing process already in existence.

*"Stress is defined as a nonspecific response to a stressor. It is common in all critical care units. The stress in the critical care unit is the interaction of stressors on patients, families, and staff. Caring is the foundation for nursing practice, and the nursing process is a means of providing care in a stressful environment. Consequently, it is appropriate to combine the concepts of stress and caring with the nursing process into a model of nursing practice that can be used in the critical care unit."*<sup>8</sup>

This statement applies exactly to our conclusions and having also examined our beliefs and values we chose Neuman's Systems Model<sup>9,10</sup> for our ITU. With retrospective analysis using Aggleton and Chalmers' eight questions on model choice<sup>11</sup> (Table 2) I feel we selected wisely.

**Table 2**

- i) What assumptions does the model make about people and their health-related needs?
- ii) What values does the model work with?
- iii) What are the key concepts a model uses?
- iv) What relationships are suggested between these concepts?
- v) How does the model see the role of the nurse?
- vi) Is the model presented in a clear-cut and understandable way?
- vii) Does the model have something of generality to say about nursing in the context for which its use is being considered?
- viii) Is the model likely to lead to better care?

### What outcomes are expected?

Aggleton and Chalmers<sup>11</sup> suggest that used in isolation the nursing process is essentially an empty tool. It demands that the five stages of assessment, nursing diagnosis, planning, intervention and evaluation are carried through but gives no guidance as to what, how, when and why. They state that "a nursing model is not the same as the nursing process . . . it is a systematically constructed, scientifically based, and logically related set of concepts which identify the essential components of nursing practice together with the theoretical basis of these concepts and values required for their use by the practitioner." The nursing process alone is therefore a very poor teaching tool providing a basic framework only. It is rather like trying to put the correct answers into a crossword

puzzle without being given the clues. Used properly within the framework of a model the nursing process can be successfully applied.

Ask any nurse interested in implementing a model what they hope to achieve from it and one of their main reasons is likely to be 'to improve care'. The underlying question is how does it improve care?

A model will not change the *actual* care which is delivered to patients. What it does do is help the nurse to decide how and when to give care and assists her to consciously consider the reasoning behind her actions. It gives structure to the way in which care is carried out and provides a basic knowledge base from which to judge the need for intervention. Since all nurses will be drawing from the same framework for practice there is less conflict. Standards are more easily established and more likely to be uniformly sustained. The nursing model should reinforce the sense of teamwork within the nursing area by promoting common objectives.

Communication is an integral and vital component in the ITU nurse's role. The ability to extract the important elements from a situation, make quick decisions, communicate and act upon them is essential. Most ITU nurses do this very well.

There is a myth that ITU nurses don't talk to their patients — we do. Even fully sedated or unconscious patients have a right to communication and every effort is made to achieve this aim.

Nurses are usually able to maintain verbal communication even during periods of rapid change but must later consolidate what has taken place so that other nurses and practitioners, the patient and his family, are appropriately and accurately informed of events.

Nursing documents are legal statements regarding the care given to patients and may be used in a court of law. Nurses should not document care simply to withstand legal scrutiny and two basic principles should be applied when writing up care:-

- An accurate and logical account should be given.
- Documentation should demonstrate all stages of the nursing process, thus giving evidence that patient care was properly constructed, and not simply recorded after the event.

A nursing model in which the nursing process is applied not only helps to provide a logical framework for a written account but allows the carer to show how she assessed and diagnosed, planned, acted and evaluated. The model thus provides the carer with a basic knowledge base which she can refer to in the future and from which she can describe and justify any action she has taken. In order to write a care plan the nurse must state the patient's problems and has to justify her actions. The care plan itself becomes the link between theory and practice, leading the nurse into rationalized, individualized care interventions<sup>12</sup>.

### Who will use the model?

Sharing information about the introduction of a conceptual model is vitally important for all concerned and everyone's opinion should be sought. It should also be considered that other professionals may wish to participate in, and may have much to offer the applied model.

### How will nurses be prepared?

Capers<sup>5</sup> suggests that preparation should be educationally based, but basic. Nurses need to feel that they have some control over the changes about to take place. Information, provided it is well structured and not in excess, will reduce anxiety.

In ITU it would be very difficult to get all the staff together at one time to provide lectures on a nursing model therefore other strategies need to be considered:-

- A mentor system can be adopted so that learning nurses can relate to one person. This has the advantage of informality, requires no timetable and information can be tailored to the learner's individual needs.
- Information can be provided in handout form, but should be carefully planned. In the early stages it will be general and stimulate thought rather than response. This is then likely to generate discussion and later provoke further research by the individual (which will probably be of more value to her). Follow-up information should gradually become more specific and greater detail can be given. The problem with handouts is not only their limitation of content, but also reliance on the individual's motivation to read them!



- From the outset nurses should be encouraged to forward ideas, experience and constructive advice which could be of value to the project. This also helps to develop a sense of having contributed and influenced the change, a factor that may reduce resistance<sup>13</sup>.
- Regular feedback during the planning phase will allow nurses time to familiarize themselves with the various elements involved and give them the opportunity to comment before it is too late. This too enhances the staff's feelings of inclusion and involvement.
- Posters can be made and displayed around the unit supporting the information in the handouts.
- Relevant reference articles should be provided and be freely available for all to read. Again, this relies on individual motivational factors.

**How and when will goals be evaluated?**

The 'goal' in this instance is the implementation of a nursing model. To achieve the final goal three phases are necessary; planning; implementing; evaluating<sup>5</sup>. Each phase has its own goal which needs evaluation and a timetable.

**Stage 1**

Planning and research (Fig. 1) needs careful co-ordination to ensure adequate time is given for literature and philosophical enquiry, and for group consolidation and discussion. Each member of any working group will bring a different educational and experiential background and clinical expertise, and have varying needs.

**Stage 2**

When the conceptual model has been chosen and developed for use in the clinical area, the implementation phase (Fig. 2) can begin. A date should be set and everyone should be aware and adequately prepared for the event. The primary implementation should take the form of a trial run and a second date set for evaluation. It is very likely that 'teething' problems will be met early on. Nurses should know who they can ask for advice and should be encouraged to offer constructive criticism. A large blank notice asking for comments (anonymous is likely to generate more response) will serve to illuminate some of the more prominent problems. The working party members should frequently assess the nurses' understanding of the model and assess their use of the written interpretation. It is important that encouragement and praise is given and that support and direction is available for nurses having difficulty.

**Stage 3**

The third phase (Fig. 3) requires evaluation of the trial and reassessment of the prototype model, with a view to improvement of the final product. It may be necessary to run several trials before the final working model is fully implemented.

**What finances are needed?**

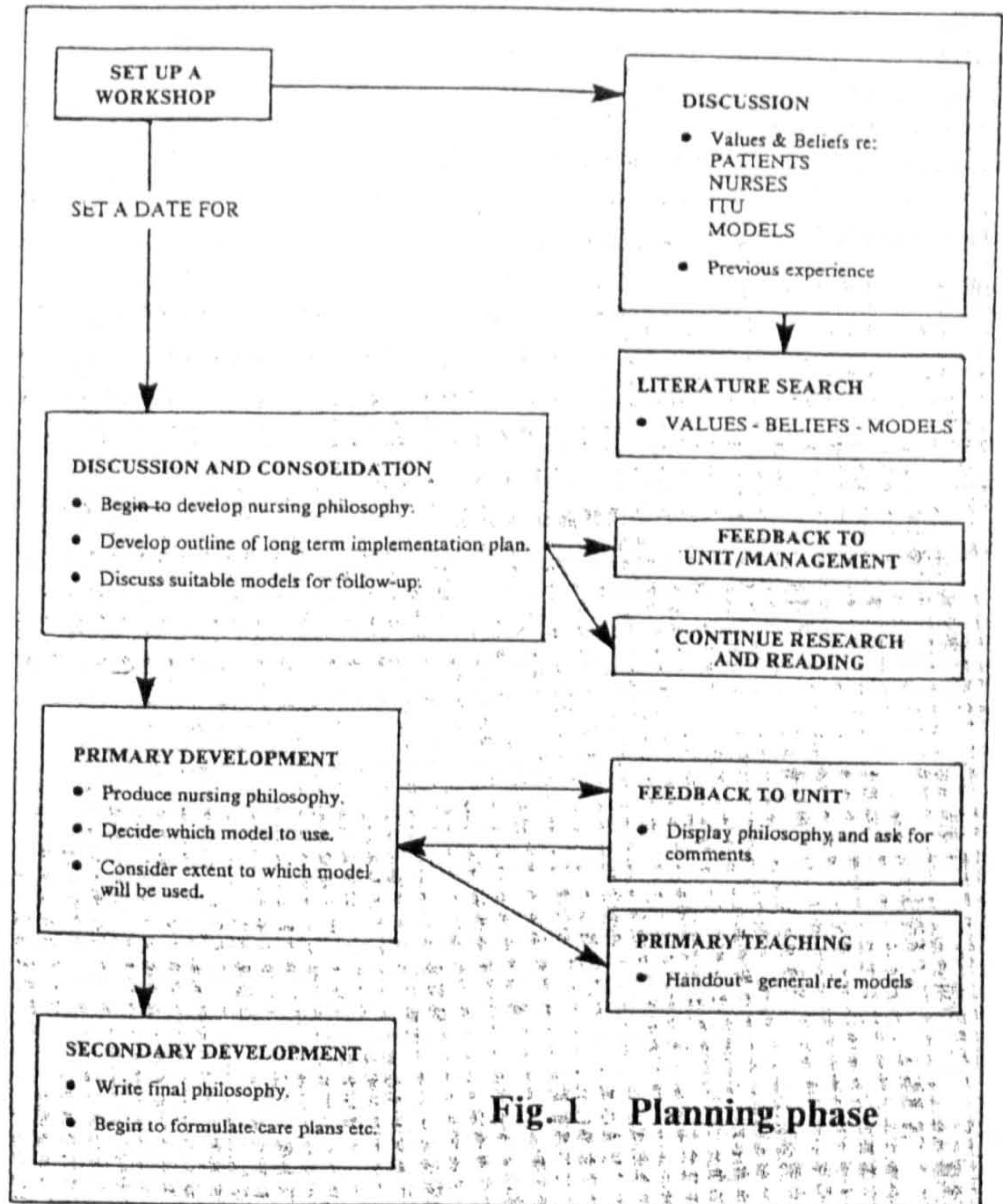
Financial needs are both obvious and hidden. The obvious needs are cost of teaching aids, printing/photocopying, paper and literature searches. Less obvious are the personal costs to the instigators such as time and travel. It is vital if the project is to succeed that approval is sought and obtained from management. Continued support will be achieved through positive feedback concerning development of the project.

**Conclusions**

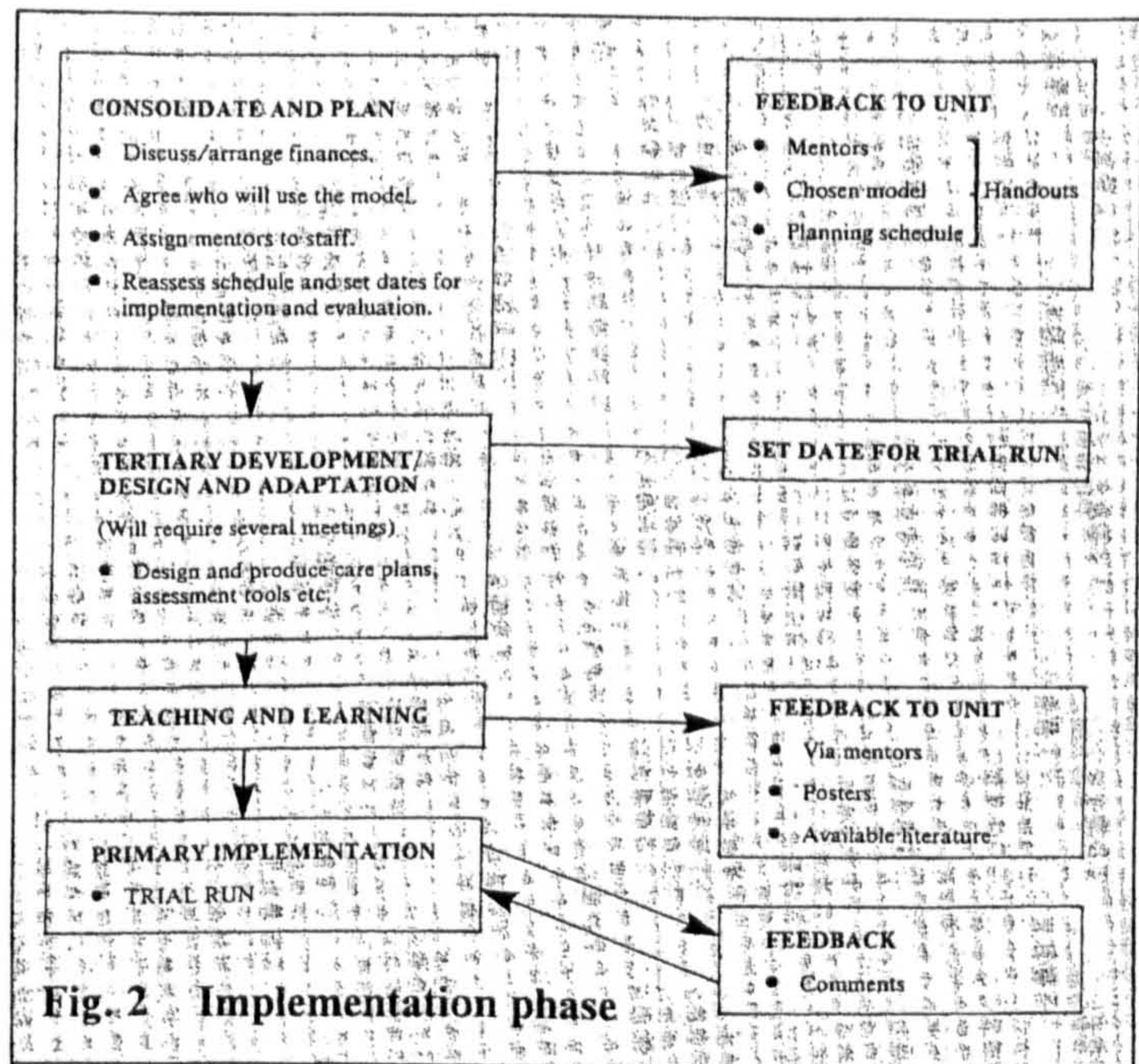
*"Caring is a concept that has both objective and subjective characteristics: objectively, caring is that which a nurse does to an individual; subjectively, caring is that which a nurse feels towards an individual. Both characteristics combine to form the foundation for nursing practice"*<sup>8</sup>.

Nursing models do have a place in ITU. They can help nurses to develop and improve their total care of patients and relatives, but the model chosen for application must be congruent with the nursing practice and philosophy already present, or they will fall into the trap experienced by Krupa<sup>14</sup> who tried unsuccessfully to adopt someone else's care plans for his ITU.

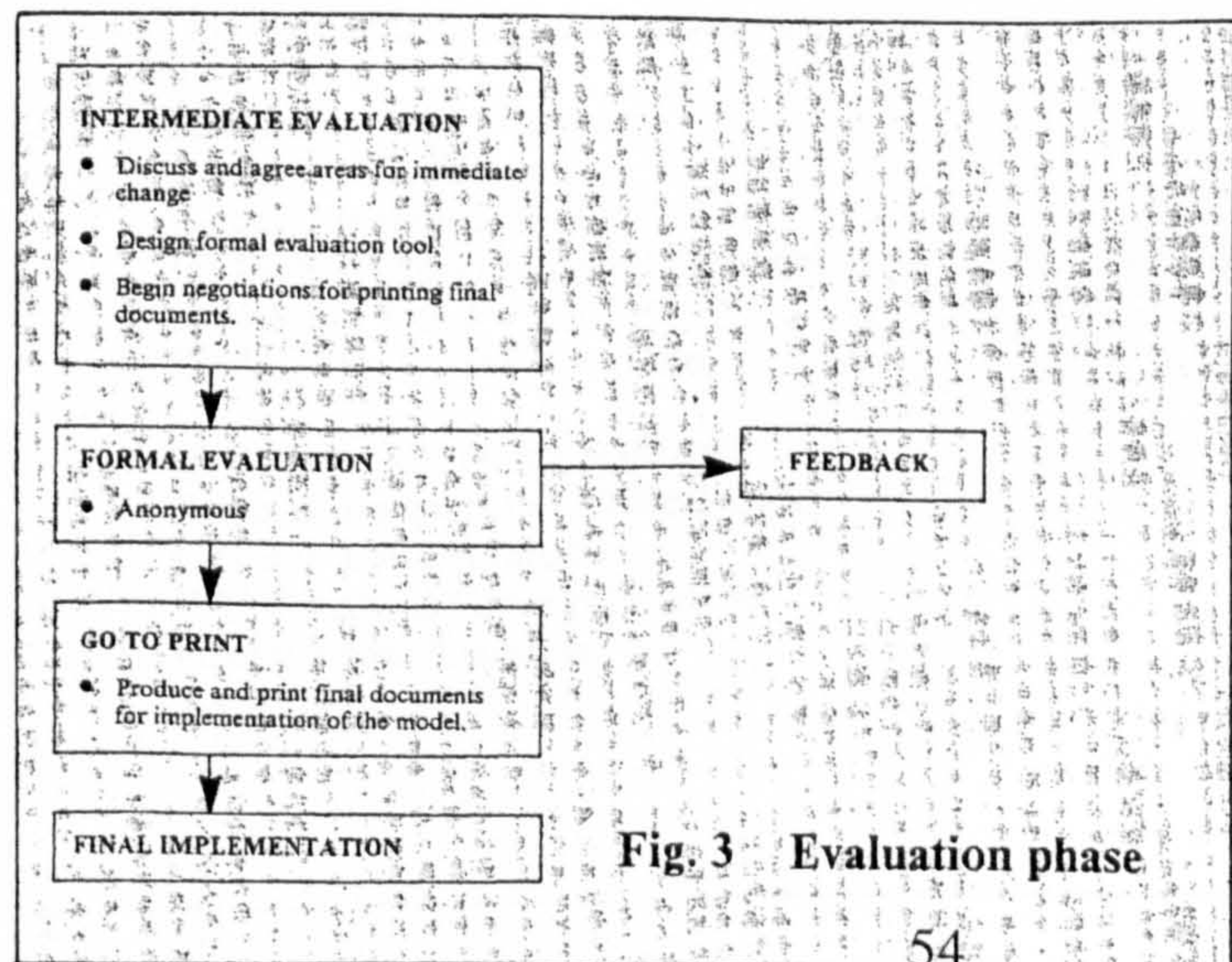
Model choice should be carefully considered and adequate time should be set aside to develop the chosen model so that its application is purposeful. Implementation of the chosen model should follow the three phases of planning, implementing and



**Fig. 1 Planning phase**



**Fig. 2 Implementation phase**



**Fig. 3 Evaluation phase**



evaluation described above. The model chosen for ITU must be flexible enough to allow adaptation for the vast range of physiological, psychological, sociocultural, developmental and spiritual needs that are likely to be encountered.

"Nursing models provide a way of identifying nursing theory as distinct from that theory that has been identified with the medical profession"<sup>15</sup>. Scientific knowledge does and must form the basis of judgements which nurses make when assessing needs and planning actions. Nurses, especially in ITU, must be able to explain the reason for any action they take based upon scientific argument. It is logical that a common identifiable knowledge base which combines the concept of caring with the sciences i.e. a nursing model, is referred to.

Much of our work implementing a nursing model involved the process of change — a concept well documented in the nursing literature. Many of the strategies we employed were directed more towards the implementation of change than specifically to the implementation of the model.

The implementation of change is a daunting prospect and will inevitably result in conflict, especially when the agent of change is a nursing model or the nursing process. The key, it seems, is active involvement of all levels of nurses in the change towards a nursing model for practice, backed up by supportive education and open channels of communication<sup>13</sup>.

#### Acknowledgements

I should like to thank Carole Moss, Mike Neill and Jan Skillen — my working party — for all their hard work.

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### BACCN STUDY DAYS

May 1991 North West  
**Haemofiltration**  
Contact: Colin Steen  
ICU Wythenshaw Hospital  
Southmoor Road, Manchester

29 May 1991 Lothian  
**Oxygen Transport**  
Contact: Julie Peacock  
ITU Western General Hospital  
Crew Road, Edinburgh

June 1991 South West  
**Pharmacology in ICU**  
Contact: Janet Phipps  
ICU, Barnstaple

1 June 1991 Tayside  
**Workshops Monitoring Techniques**  
Contact: Joan Foulkes  
CCU Ninewells Hospital  
Dundee

4 June 1991 East Yorks & North Lines  
**Nursing Care of the Patient with Guillain Barre Syndrome**  
Contact: Sue Clark  
ITU Scunthorpe General Hospital  
Scunthorpe, Yorkshire

26 June 1991 Wales  
**General ITU**  
Contact: Netta Lloyd-Jones  
Nurse Teacher, University Hospital  
Heath Park, Cardiff

July 1991 South Yorkshire  
**Aromatherapy**  
Contact: Marie Latreche  
ICU Royal Hampshire Hospital  
Glossop Road, Sheffield

2 July 1991 Southern Region  
**Pain**  
Contact: Carol Ball  
Tutor Continuing Education Department  
College of Nursing  
St. Bartholomew's Hospital, London

16 July 1991 East Midlands  
**Metabolic Disorders, Endocrinology and Obstetrics**  
Contact: Chris Potter  
ITU Leicester General Hospital, Leicester

16 October 1991 Northern  
**Paediatric Update**  
Contact: Isobell Jackson  
ITU Darlington Memorial Hospital  
Hollyhurst Road  
Darlington, County Durham

29 October 1991 East Midlands  
**Stress & Burn Out in Critical Care**  
Contact: Lynn Randall  
ITU Glenfield General Hospital  
Groby Road, Leicester



## The application of the Neuman systems model to intensive care

Paul R. Fulbrook

Willingness to explore different ideas and initiate change as part of the search for better ways of providing care is essential in intensive care nursing. For a number of years now there has been discussion of the possible benefits of using an explicit model of nursing as a framework for practice and many such models have been developed and described in nursing literature, however there have been some difficulties in using them in practice.

In this paper a brief account of some of the characteristics of intensive therapy units (ITUs), the possible merits of using nursing models, the nursing process, and nursing care plans in them is followed by a summary description of the Neuman systems model of nursing. A description of the process of choosing and using this model in one unit includes the 'Nursing philosophy for ITU' and nursing documentation which were developed.

### INTRODUCTION

Nearly 2 years ago at one of the 'Sisters' meetings' it was decided that the intensive therapy unit was ready for introduction of a nursing model as a framework for practice. Four volunteers, including the clinical teacher for the unit, set up a workshop to look at application of a model for intensive care (Fulbrook, 1991) and the model chosen was the Betty Neuman Systems Model (Neuman, 1982, 1989).

The intensive therapy unit (ITU) at Queen Alexandra Hospital is a six-bedded ward catering for all types and all ages of patients,

though adults predominate. The unit was then staffed by four sisters and a broad skill mix of 23 other staff nurses and enrolled nurses. Originally designed for 12 patients, the unit is spacious and has the potential for four patients to be in cubicles. Three consultant anaesthetists are the medical directors and there is a senior anaesthetist on site on 24h call. The English National Board (ENB) 125 course (Intensive and coronary care nursing) is in operation, and enrolled nurses undergoing a course to convert to first level registration come to the unit. Currently, student nurses in basic training do not come to the ITU regularly.

Prior to implementation of Neuman's model the nursing process was not used in this ITU. Care was planned individually by each nurse based on the handover from the nurse looking after the patient previously, and any assessment of the patient was variable and dependent on what each nurse considered necessary. No

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record was made that showed care was planned. The apparent result of care was generally assessed using medical criteria according to body systems at the end of each shift, and documented using the conventional Kardex system.

It is very hard to find in the literature references to the application of Betty Neuman's model to intensive care nursing, however there are some. Neuman's (1982) first edition included chapters by Dunbar and McInerney who applied the model to surgical intensive care and cardiac intensive care respectively. Dunbar (1982) modified Neuman's assessment/intervention tool for use in intensive care, and Fawcett et al (1987) also applied the model to intensive care. Redheffer (1985) has applied the model to emergency nursing, Sullivan (1986) to the care of a patient with acute spinal cord injury and Wilson (1987) to assessing the psychological response of patients in intensive care. Time, the kind of patients admitted, and the complexities of communication are all relevant considerations when introducing change in an ITU.

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## TIME

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In an ITU time is one of the major concerns when considering the application of a model. Because of the continuous stream of life-threatening problems affecting ITU patients and the unpredictable nature of these problems the documentation involved should ideally be short—the minimum necessary. If the process of documentation of care is lengthy then it is quite likely that on many occasions it will not be completed, or will be completed inadequately simply because of shortage of time.

The time factor is probably the main reason many ITU staff using adapted care plans have chosen to use large sections of predetermined core plans. The overwhelmingly physiological nature of the many obvious problems of most ITU patients probably accounts for the reason many units do not use a philosophy of nursing related to a published model of nursing, and therefore staff tend to evaluate care according to body systems. Foster (1987), who devised a care plan for use in an ITU, suggested that one of the

main reasons for not implementing the nursing process in critical care areas may be the daunting prospect of devising care plans which are concise, yet comprehensive, in an area where problems change with such rapidity.

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## ITU PATIENTS

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Often patients encountered in ITU are unconscious or heavily sedated, and therefore very poor communicators of their own personally perceived needs. Because of this obvious disadvantage any nursing model applied in ITU should have within it an element which allows the family/friend of patients to advocate for them and have a reasonable say in their care.

It has been found that in an ITU setting families can have a profound impact on critically ill patients' response to illness (Bouman, 1984). A recent study (Dockter et al, 1988) comparing ITU nurses' with ITU families' perception of needs concluded that 'concordance in perceived needs of family members and care providers may lead to greater need satisfaction and it is advocated that both the patient and the family (rather than the patient alone) be the focus of treatment because of the (positive) relationship between social support and patient recovery'.

Application of Neuman's model in nursing ITU patients must cater within the framework of the model for the considerable physiological problems so often encountered with such patients. This does not mean, however, that psychological problems should assume secondary significance. With some patients, for example those repeatedly admitted with a diagnosis of para-suicide, these may present far greater and more complex issues for ITU nurses to deal than with than the physiological problems. The model for ITU must be flexible. It must be capable of covering all the areas of need most important for each individual patient. The model must also be able to accommodate change over time, adapting to the patients' changing needs. A patient in ITU may have overwhelmingly physiological problems on admission which may be more or less resolved during the last few days of his stay, and may have been superseded



by other needs more important to him. A typical example would be a cardiac patient who having survived his infarct becomes more concerned about his business.

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## COMMUNICATION

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Communication between staff is of vital importance in caring for critically ill people. Time can be very limited in ITU if the patient is unstable and there are many things to be done. Priorities in caring are usually ordered according to what is perceived by the nurse to be most necessary for the patient's stability at any given time. A major consideration is that the documentation process must be designed in such a way that writing, and therefore time consumed by it, can be kept to the minimum necessary. This inevitably means adopting some element of predetermined core plans. The format should be designed to assist nurses to *plan* care and then evaluate it (rather than just assess it after the event, as is traditionally the practice in nursing).

Communication is an integral and vital component in an ITU nurse's role. The ability to extract the important elements from a situation, make quick decisions, communicate and act upon them is essential, and most ITU nurses do this very well. The problem encountered in ITU is that situations can change with frightening rapidity. Nurses can often barely keep up with the practical nursing during periods of acute change in a patient's condition and treatment. They must later consolidate recording of what has taken place so that other nurses and practitioners, the patient and his family, are accurately informed.

Some nurses express the belief that ITU nurses do not have to talk to their patients — they do. Even fully sedated or unconscious patients have a right to communication, though their families must obviously shoulder the burden of much of the necessary information. A nursing model appropriately used will aid nurses to recognise and meet people's needs for communication, to relate events logically, and provide a framework for recording and evaluation of nursing intervention.

Patients in ITU usually have many needs which must be considered simultaneously and may require intervention by several members of the health care team. Each ITU nurse is the focus for all the communication regarding the various aspects of his or her patient's welfare, integrating and directing the order and priority of all the factors involved. Use of a nursing model to structure communication of these factors in documentation provides the nurse with a framework within which everyone's contribution to the patient's welfare is considered and common goals can be integrated.

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## WHICH MODEL?

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No matter how autonomous nurses are it must be remembered that they do not practice in isolation, and in ITU especially the interface with many other health care professionals is evident. Sharing information about the introduction of a conceptual model is therefore vitally important for all concerned, and everyone's opinion should be sought. It should also be considered that where possible and appropriate other professionals may wish to participate in the process of applying a nursing model and may have much to offer.

The model chosen for any area of clinical practice should ideally be based on concepts which are congruent with the current nursing beliefs and philosophies already in existence in that area. The model should also be able to promote the nursing behaviour which is held to be ideal within these beliefs and philosophies. If the nursing behaviour suggested by the model is inherently different from that already in existence then it is likely that resistance to change will occur (Capers, 1986).

An ideal model for ITU should have a holistic concept of persons, should be adaptable to allow predominantly physiological needs to be met fully, should not require lengthy documentation, the essential concept should be reasonably easy to understand and stated in acceptable language, and should provide a framework for the nursing process as already understood.



Qamar (1986) describes a stress-carative model for ITU and states:

'Stress is defined as a nonspecific response to a stressor. It is common in all critical care units. The stress in the critical care unit is the interaction of stressors on patients, families, and staff. Caring is the foundation for nursing practice, and the nursing process is a means of providing care in a stressful environment. Consequently, it is appropriate to combine the concepts of stress and caring with the nursing process into a model of nursing practice that can be used in the critical care unit.'

Her statement is almost tailor-made to support the application of Neuman's model to ITU.

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## THE NEUMAN SYSTEMS MODEL

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### Historical development

Betty Neuman began to develop her model in response to the needs of her graduate nursing students, when she was a lecturer at the University of California, Los Angeles. The students expressed a need for wider course content so that they could understand the full extent of nursing problems before focusing on specific nursing problems (Neuman & Young, 1972). Although Neuman originally developed her model for curriculum application it has since been applied many times to nursing practice, administration, education and research.

Neuman claims her model is comprehensive and dynamic. It views people as open systems in constant interaction with the environment. The model focuses on the reactions of an individual to environmental stressors and the factors necessary to adapt to or reconstitute from these stressors.

The following outline of the model necessarily draws heavily on the selected works of Neuman which are listed in the references for this paper. The four major concepts identified by Neuman (and generally considered to constitute the nursing paradigm) are: the person; the environment; health; nursing.

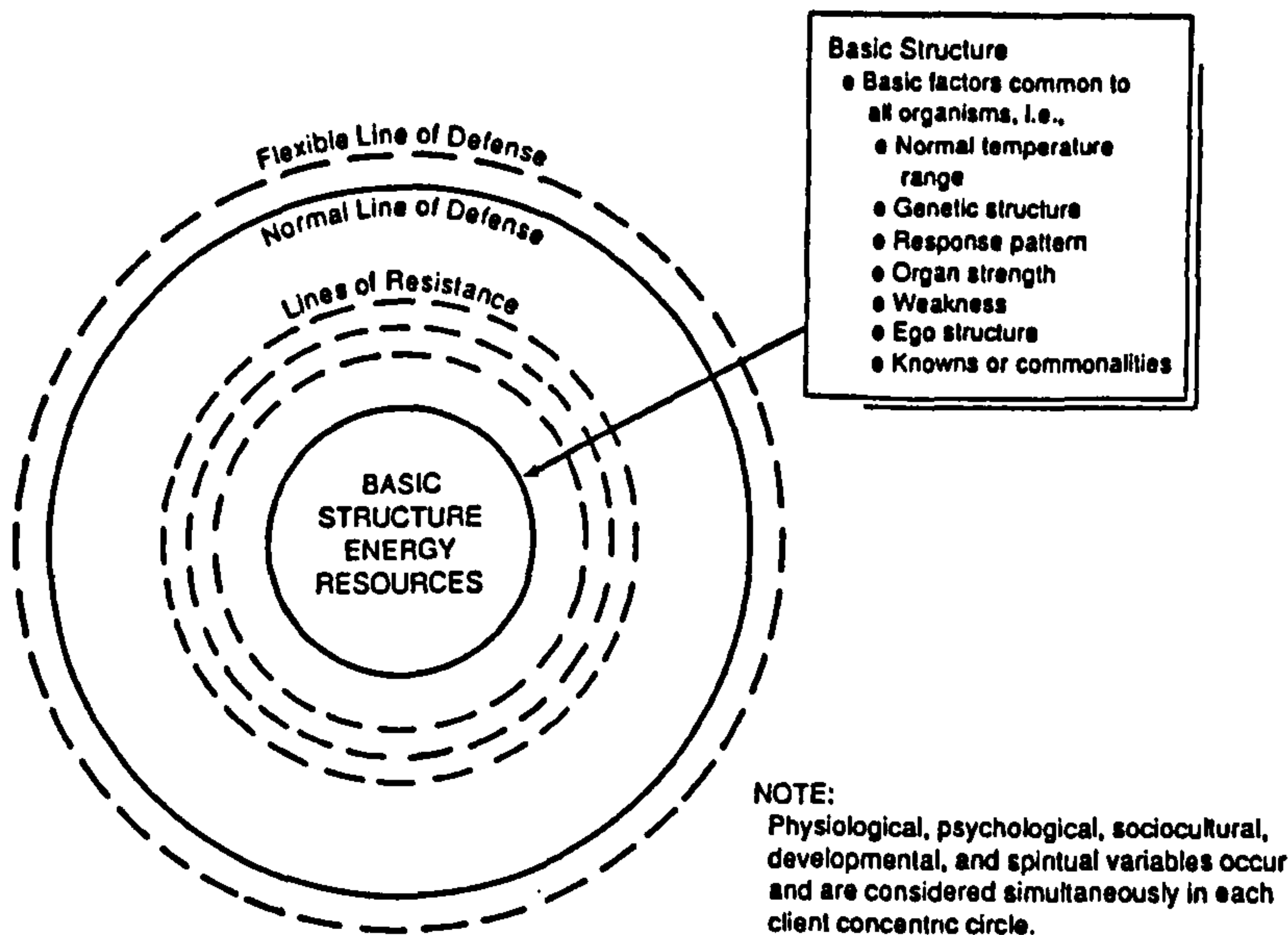
### The person

The person is seen as a multidimensional composite of five variables: physical; psychological; socio-cultural; developmental; and spiritual and is said to have a central 'core' of basic survival mechanisms such as temperature control, ego, organ function.

The central core is protected by lines of 'defence' (Fig. 1). The outer layer is the 'flexible' line of defence, and is variable, responding to the particular stressor. It changes from day to day and is influenced by such things as rest and nutrition. The inner or 'normal' line of defence has developed over time and represents the individual's steady state. It is a composite of variables such as developmental stage, life style, coping patterns, socialisation etc. This line represents the state of wellness and adaptation of the individual and is generally stable. If the cushioning effect of the flexible line of defence is unable to protect the individual against a particular stressor the normal line of defence will be breached and lines of 'resistance' within the inner area are called into play in an attempt to restore the individual to normal defence line status. The lines of resistance represent the internal factors which determine an organism's response to a stressor. Examples would be the clotting response to bleeding, the immune response to infection or the psychological response to bereavement. If these lines of resistance fail to restore the equilibrium intervention is necessary. If the lines of resistance are broken down and intervention fails the central core will be penetrated and may result in death.

### The environment

Neuman contends that humans are in a state of constant interaction with the environment, and defines the environment as the internal and external forces surrounding the individual at any given time. The stressors imposed by the environment are further categorised as intra-, inter- and extra-personal, and may either noxious or beneficial.



**Fig. 1** The core concept.  
(Reproduced with permission from Neuman, *The Neuman Systems Model* (2nd ed), 1989).

### Health

Neuman views health in terms of a wellness continuum which is dynamic according to the environmental variables with which it is in constant interaction, rather than a particular state (Fig. 2). Wellness is equated with an intact normal line of defence. A reduced state of wellness is the result of a need not met. Wellness is viewed within the physical, psychological, spiritual, socio-cultural and developmental variables and is influenced by intra-, inter- and extra-personal stressors.

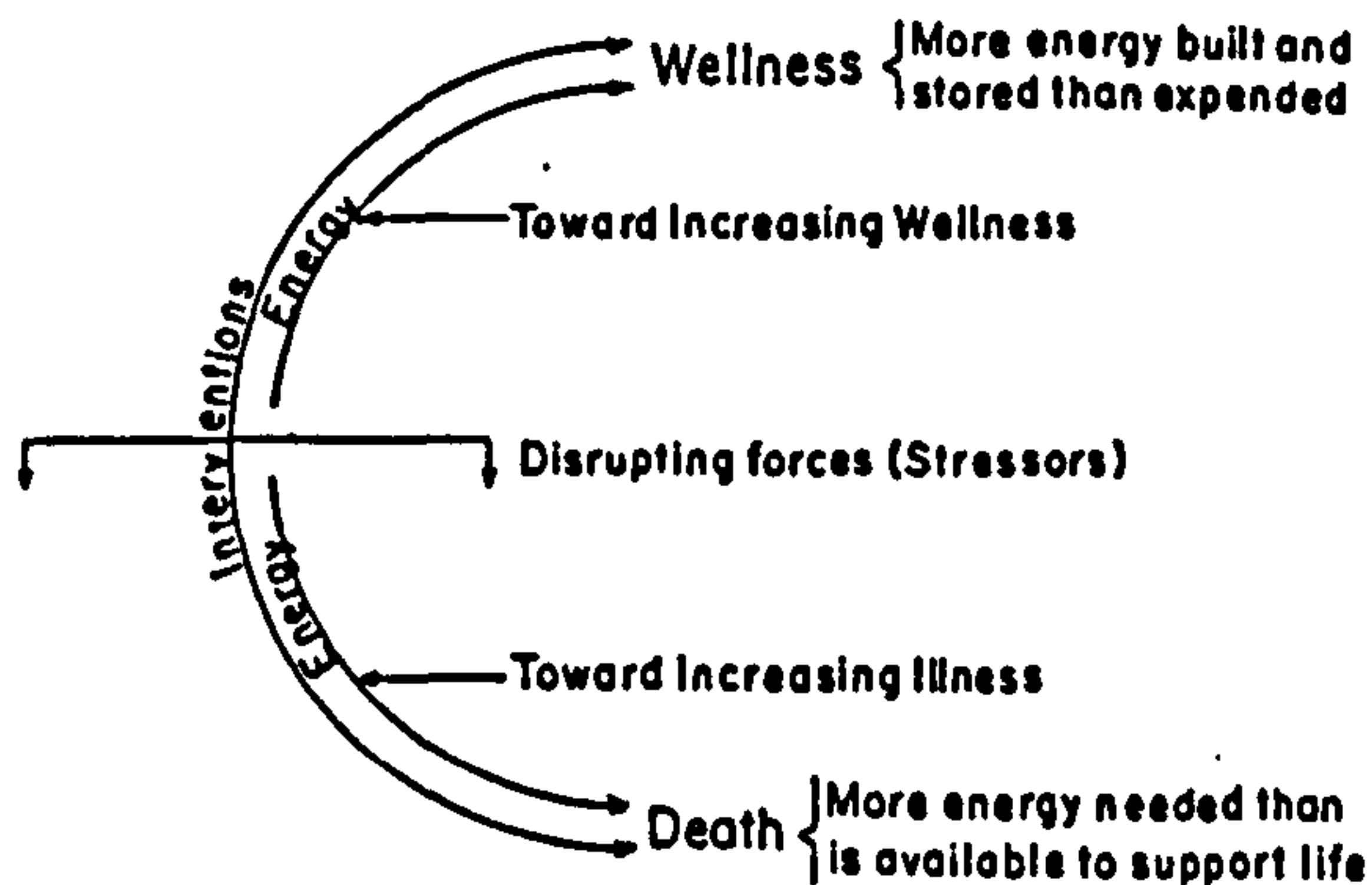
### Nursing

Neuman considers nursing to be a unique profession concerned with all the variables affecting human response to stressors (Fig. 3). The primary aim of nursing is stability of the patient/client system. This is achieved through nursing intervention to reduce the stressors. This is more specifically achieved through the nursing process, defined by Neuman as i) nursing diagnosis ii) nursing goals and iii) nursing outcomes.

Nursing diagnosis is necessarily based on thorough assessment and consideration of the five variables within the three stressor areas.

Nursing goals are negotiated with the patient in order to correct his perceived variance from wellness, as perceived by patient and nurse.

Nursing outcomes are considered within the five variables and achieved through the primary, secondary and tertiary intervention framework.



**Fig. 2** Wellness – illness concept (Neuman, 1982, 1989).  
(Reproduced with permission from Neuman, *The Neuman Systems Model* (2nd ed), 1989).



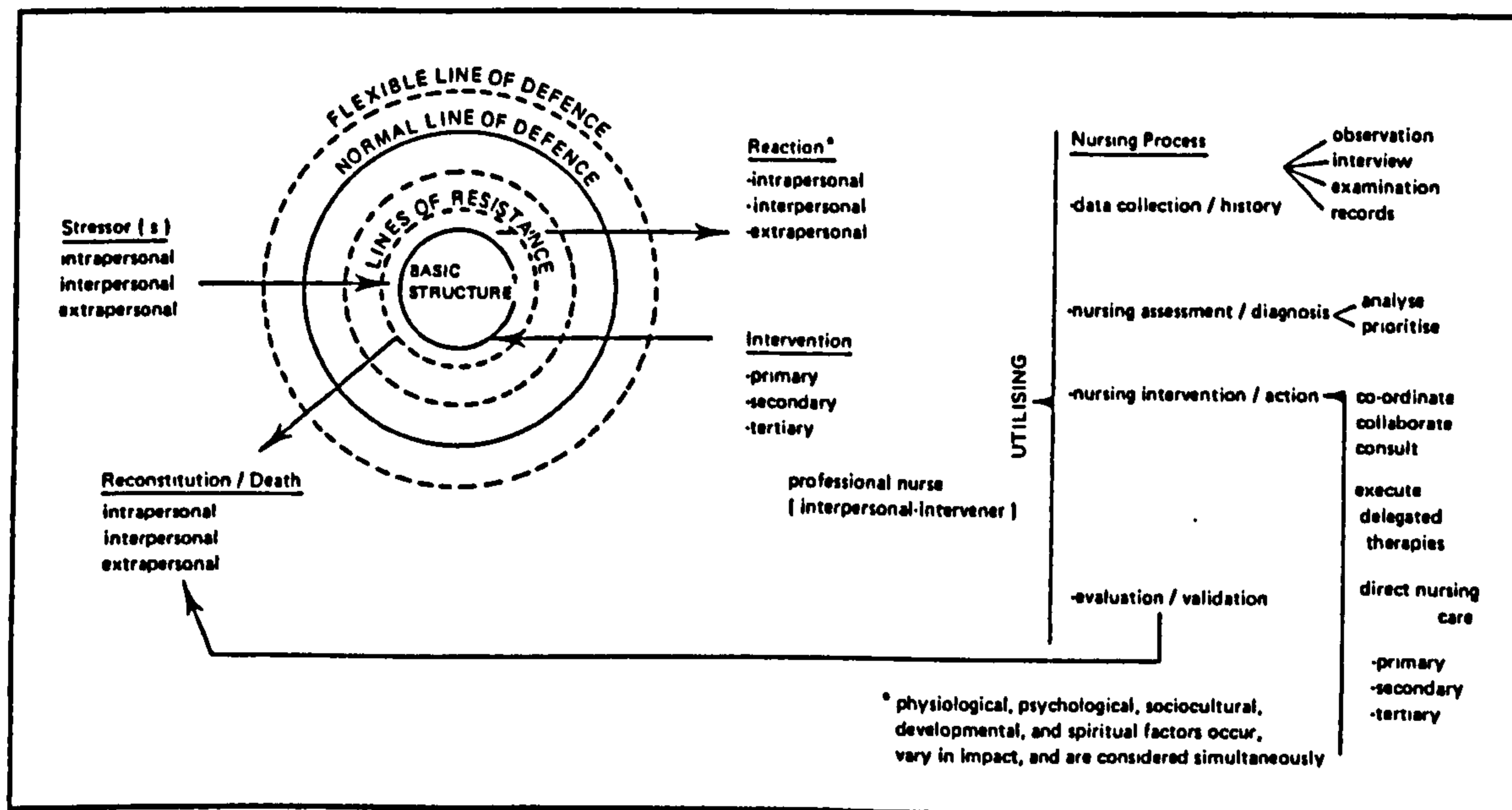


Fig. 3 Neuman systems model  
(Reproduced with permission from Mirenda, 1986).

## DEVELOPING A UNIT PHILOSOPHY

Having established a workshop in the Queen Alexandra Hospital ITU the next stage in choosing and using a model was to explore the beliefs, attitudes and values held by unit staff about people, nursing and intensive care, alongside investigation of various models of nursing. Eventually the Neuman model was chosen. The workshop group were thus able to formulate a list of statements which formed the basis of our unit philosophy. The list was then combined with Neuman's concepts to produce the final unit philosophy. Those involved are very pleased with the outcome and feel that it would be appropriate for many other ITUs. The nursing philosophy for ITU at Queen Alexandra Hospital is:

'All patients in ITU are individual, and as such have their own individual needs which should be given equal consideration. These needs are physiological, psychological, socio-cultural, spiritual, and developmental. An holistic philosophy of care is encouraged which also

encompasses the needs of the significant family/friends of the patient.

All patients in ITU deserve to receive the highest possible standards of care. The health care team is multi-disciplinary and is commonly committed to providing this care according to the individual needs and wishes of each person.

ITU patients are considered to exist along a continuum of health. The ultimate aim of health care is to return the person to his former environment in a state of maximum well-being and independence. Although the patient in ITU may be substantially deviant from his optimal position along his health continuum the role of the nurse in ITU is to assist the patient as far as is possible towards achieving his norm. This philosophy is therefore considered within the context of the patient's entire stay in hospital, and in preparation for his return home.

Life is sacred. The sanctity of life is paramount, and will always be considered professionally, ethically and morally in the best interests of the patient'.



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## ASSESSMENT

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Neuman has developed a comprehensive assessment/intervention tool for use with her model which relies heavily on assessment by interview of the patient's personally perceived needs (by identifying stressors). The nurse/caregiver also assesses the patient's needs (stressors), using the same interview questions. The combined data produced thus provide an information pool from which jointly agreed nursing diagnoses can be formed and for which goals can be set. The tool has previously been adapted for critical care by Dunbar (1982).

Neuman (1989) asks nurses wishing to develop their own assessment/intervention tools to consider the following two points:

1. Proper assessment would include all knowledge of factors influencing the client's perceptual field.
2. The meaning of a stressor should be validated by both the client and the caregiver, highlighting distortions for resolution, leading to relevant nursing action.

Neuman concedes, however, that under certain circumstances another person of appropriate personal significance to and understanding of the patient may act as his or her advocate.

In an ITU the problem encountered is that many patients arrive in moribund states and are unable to communicate adequately. The family, faced with a crisis, are severely stressed and would be unlikely to respond warmly to some of the questions posed by Neuman such as 'How do present circumstances differ from your usual pattern of living?' A different, more subtle strategy needs to be considered for primary assessment of this group of patients.

The primary assessment tool (Fig. 4) which the workgroup have devised for use at Portsmouth combines the patient's (and/or their advocate's) and the nurse's perception as conceived by Neuman (1974, 1980), and in doing so provides a framework for early nursing diagnoses from which intervention can be planned. It is designed to encourage the assessing nurse to focus on the family as well as the patient.

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## CARE PLANNING

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For many of the reasons described earlier the ITU staff at Portsmouth chose to use a core plan approach as a basis for patient care, though in an ideal world without the constraint of time we would much prefer to use a completely individual approach.

The Portsmouth adapted care plan (Figs. 5a, 5b) is for a 24h period and is developed from Schneider's (1984) double-sided A3 format, though only the problem/intervention side of the page is shown. Opposite each page is space for written evaluation and identification of specific goals. Many of the patients' problems/needs are considered to be standard for most ITU patients, but the pre-printed parts of the care plan which refer to these only become 'live' when they are identified by underlining or using a highlight pen. The 24h plan is made at the start of the morning shift and evaluated at the end of each subsequent shift. If a problem or a patient's condition has changed during a shift then this is recorded in the evaluation at the end of the shift and the nurse taking over on the next shift will amend the care problem/need accordingly. Each nurse identifies her shift by writing in a different colour e.g. blue: morning; green: afternoon; red: night.

It would be impossible to include all the possible patient problems on a single care plan (though computers may solve that problem in the future) so space is provided for individual and less common problems to be included.

Because most of the problems encountered by ITU patients continue over time, goals are not given for each individual problem, rather a broad aim e.g. physiological stability is given for each variable. If, however, a goal is identified and deemed achievable within the 24h framework of the care plan space is provided for it to be recorded on the evaluation page. These goals are considered to be specific e.g. to extubate the patient, and should not include general aims e.g. to maintain ventilation.

The care plan itself demonstrates nursing intervention in the primary and secondary modes only, tertiary intervention being developed at a later stage when the patient is



**INTENSIVE THERAPY UNIT  
PATIENT DETAILS**

Name .....	S/M/W/D .....	Next of kin details: ..... ..... ..... ..... ..... ..... ..... ..... ..... .....
Admission Date .....	Admitted from .....	
Hospital No .....	Consultant .....	
Address .....		
.....		
.....		
Tel. No .....		
Date of Birth .....	Occupation .....	
Provisional medical diagnosis .....		
.....		
Relevant past history .....		
.....		
Recent medication .....		
Allergies .....		

**PRIMARY ASSESSMENT**

**NURSING SUMMARY**

**FAMILY COMMENTS**

<u>Patient</u>	Known as ..... ..... ..... ..... ..... ..... ..... ..... ..... .....	
Physiological problems .....		
.....		
.....		
Psychological problems/needs .....		
.....		
.....		
Sociocultural needs .....		Religion .....
Predisposing factors to admission .....		.....
.....		.....
<u>Family</u>	Known as ..... ..... ..... ..... ..... ..... ..... ..... ..... .....	
Family leader .....		
Family concerns and perceptions .....		
.....		
.....		
Dependants .....		Known as .....
.....		.....
Immediate financial concerns .....		.....
.....		.....
Travelling needs .....		.....
.....	.....	
Accommodation needs .....	.....	
.....	.....	
Other health professionals involved .....	.....	
<u>Information given to family</u> .....	.....	
.....	.....	
.....	.....	
.....	.....	

Valuables Yes/No; Listed Yes/No; Given to relative; Night safe; Patient Affairs

Fig. 4 Patient detail sheet.

**Section I – PHYSIOLOGICAL**  
Broad Aim: Physiological stability

PROBLEMS	PRIMARY INTERVENTION	SECONDARY INTERVENTION
<b>Respiratory</b> Unable to maintain airway		Airway/oral/nasal/trache tube in situ Securely tie in place
Unable to breathe adequately due to	Monitor respiratory signs Monitor blood gases	Ventilated/ _____ Monitor ventilator parameters Care of arterial line.
Potential tracheal sores due to E.T.T.	Monitor E.T.T. cuff pressures Support ventilator tubing	
Potential/actual chest congestion/ infection due to	Air entry auscultation Chest physio _____ hourly Tracheal toilet _____ hourly Monitor aspirate type/amount/specimens Provide humidification with _____	Encourage deep breathing/coughing Administer nebulisers/inhalants Postural drainage.
Further problems _____ _____ _____ _____ _____	_____ _____ _____ _____ _____	_____ _____ _____ _____ _____
<b>Cardiovascular/renal</b> Actual/potential heart rate/rhythm disturbance	Monitor ECG continuously	Monitor antiarrhythmic effects 12-lead ECG required
Actual/potential unstable blood pressure	Monitor BP continuously	Give fluids as prescribed Titrate inotropic support
Actual/potential fluid balance disturbance	Urinary catheter in situ Record CVP _____ hourly Record urine output hourly Record urine specific gravity Monitor big toe temperature	Catheter care Give fluids as prescribed Swan Ganz in situ – care of line Monitor effect of diuretics
Actual/potential renal failure	Monitor urine output Monitor urea / creatinine / Potassium / sodium levels	Monitor effect of diuretics / dopamine Peritoneal dialysis / haemofiltration in progress
Actual/potential electrolyte imbalance	Monitor serum electrolyte levels Observe for ECG changes	Administer prescribed electrolytes
Hypo/hyperthermia due to	Monitor core temperature Observe for arrhythmias	Warm using space blanket (if core >30°C) _____ Antipyretics / fan therapy / tepid sponging / cooling blanket
Potential deep vein thrombosis	Antiembolic stockings in situ	Monitor anticoagulant therapy – observe for signs of bruising / bleeding
Further problems _____ _____ _____ _____ _____	_____ _____ _____ _____ _____	_____ _____ _____ _____ _____

Fig. 5a Assessing patient's physiological needs.



PROBLEMS/NEEDS	PRIMARY INTERVENTION	SECONDARY INTERVENTION
<b>Neurological</b> Reduced conscious level due to  Raised intracranial pressure due to  Further problems _____ _____ _____	Monitor Glasgow Coma score Observe and record pupil size Position head up 30-40° Avoid coughing/unnecessary stimulation Nursing measures to reduce cerebral venous congestion  _____ _____ _____	Maintain patient safety  Monitor CO <sub>2</sub> levels (3.5-4.0 kPa) Maintain adequate sedation and paralysis Maintain restricted fluid balance Monitor anticonvulsant therapy  _____ _____ _____
<b>Nutrition / Endocrine</b> Actual/Potential undernutrition due to  Constipation / diarrhoea  Hypo / hyperglycaemia due to  Further problems _____ _____ _____	Monitor weight/skin fold thickness Record bowel sounds  Record bowel actions  Monitor blood glucose _____ hourly  _____ _____ _____	Naso/orogastric tube in situ Free drainage/feeding:- _____ Parenteral nutrition:- _____  Give aperients/bulking agents as prescribed  Give glucose / insulin as prescribed Sliding scale insulin infusion  _____ _____ _____
<b>Integument/infection/musculoskeletal</b> Actual infection sites:- _____ _____ _____ Wound(s):- _____ _____ _____ Total / partial inability to maintain person hygiene  Potential / actual pressure sores and loss of muscle tone  Further problems _____ _____ _____	Collect specimens for culture prn  _____ _____ _____ Maintain personal hygiene  _____ _____ Passive exercises _____ hourly Turn as required Aids used:- _____ _____ _____ _____	Dressing:- _____ _____ _____ Mouth care _____ hourly with _____ Eye care _____ hourly with _____ _____ _____ _____
<b>SECTION II – Psychological/Spiritual</b>		
Broad aim: Psychospiritual harmony		
Pain due to  Sensory deprivation  Sensory overload  Sleep deprivation  Anxiety due to  Spiritual needs:-	Information/explanation/optimal position  Effective communication / touch / reality orientation. Appropriate use of TV. / radio / communication aids:- Reduce unnecessary noise/light/movement Plan rest and sleep periods  Information / explanation  _____ _____ Maintain dignity / self esteem  _____ _____	Analgesia:- _____ _____ Appropriate use of sedation  _____ _____ Night sedation, as necessary  Explain all procedures  _____ _____ _____
<b>SECTION III – Sociocultural/developmental</b>		
Broad aim: Family stability		
Religious needs:-  Family needs: hope and information  Financial needs:-  Specific family anxieties:-	_____ _____ Encourage discussion/questioning  _____ _____ _____ _____	Chaplaincy liaison _____ _____ Encourage participation in decisions/care/display of personal effects Social worker liaison  _____ _____ _____

Fig. 5b Assessing patient's broader needs

ready for transfer back to the ward. It is summarised within the framework of Neuman's 5 variables and recorded on the back page of the patient's folder described below.

Primary intervention has been interpreted to include not only nursing care directed to potential problems/needs but also monitoring needs, to detect change. Documentation of secondary intervention describes nursing treatment/action for the identified problems, but cannot provide detail in this limited format. The care plan merely seeks to provide headings for nursing action. The actual nursing care delivered to the patient will vary according to the individual knowledge, skills and attitudes of each nurse.

A 24 h care plan on its own can be a clumsy tool and demands that new nurses, who do not know the patient, wade through piles of notes to update themselves. A three-page folder, designed to replace the old Kardex, provides a summary of the patient's stay in ITU. The folder has the following layout:

Cover – patient details and primary assessment (Fig. 4)

Inside cover – admission history and summary of significant events

Middle – space to clip in care plans

Additional 2-page section folding into middle

side a) significant communications with patient/family

side b) transfer to ward notes – summary of long-term problems/needs

Tertiary intervention has been interpreted for use in ward discharge planning, and is summarised in terms of ongoing needs. It is concerned with the patient's unresolved problems and unfulfilled needs, and has been used to provide basic data from which the ward nurses can continue the nursing care already started in ITU and to give them access to information on needs identified by ITU staff for which intervention in the ITU environment would have been inappropriate. It provides a knowledge base from which

it is possible to begin planning the patient's discharge home.

Tertiary intervention is included as a summary of ongoing needs for follow-up by the ward. In many cases, though, education, early rehabilitation and several other tertiary factors may have already been addressed by the ITU staff, and will have been recorded in the evaluation/outcome section of the care plan.

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## CONCLUSIONS

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The Portsmouth experience has confirmed for us that nursing models do have a place in ITU and can help nurses to develop and improve their total care of patients and relatives, but the model chosen for application must be congruent with the nursing practice and philosophy already present. If nurses recognise this then the model they choose and the way in which they use it as a framework for the nursing process will stop them falling into the trap experienced by Krupa (1989) who tried and failed to adopt care plans developed by someone else, for his ITU.

As nursing evolves professionally nursing care will develop and change. It is therefore vitally important that the application of a model is regularly evaluated and updated to ensure that the essential concepts of the model remain congruent with the current nursing philosophy and practice.

Nurses, especially in ITU, must be able to explain the reason for any action they take based upon scientific argument. If the knowledge base is not referred to when making decisions then the action can have no foundation and should be questioned. Explicit use of a model of nursing, suitably adapted, will provide the basic framework to enable each nurse to design and carry out patient care logically, based on referral to her/his knowledge base and using a holistic perspective. It may also facilitate communication between staff, integration of various aspects of care and the ordering of priorities.

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# Assessing needs and planning actions

*Paul Fulbrook investigates how knowledge forms the basis of the judgements which nurses should be making in assessing needs and planning actions*

When discussing the Charter of the Royal College of Nursing, Baroness McFarlane (1) suggests that it is a 'charter for caring' which commits its membership 'to promote the science and art of nursing'.

'Nursing is essentially synonymous with caring. The caring role is central to nursing but shared with patients themselves, their relatives and with other health professions. It consists of acts of helping and assisting with daily living activities which may be simple or complex. Giving help may involve not only acting for or doing something for another but guiding, supporting, teaching and providing the right environment for another. The art of helping is built on a scientific basis. Knowledge of underlying scientific principles is needed as a basis of judgement for nursing actions.

'There must be a far greater application to the scientific basis of our art. Research becomes a necessity.... The research approach to problems of care and the application of known facts become a professional responsibility.'

Many nurses of today are disgruntled with their professional status and feel that nursing is not even recognised as a profession by the majority. Some nurses, perhaps, would resist the suggestion that they have a profession of their own and would prefer to be seen

as a branch of the medical profession. Certainly, many of the medical profession do not consider nurses to be professionals in their own right. So what claim do nurses have to a profession?

## Exploring the question

*Profession* is defined as 'an occupation requiring special training in the liberal arts or sciences' (2). The question thus posed is whether nursing is a science. Akinsanya (3) argues for a scientific foundation of nursing and developed a theoretical model to support his claim. He states that nursing education has always depended upon its scientific base, that is, anatomy, physiology, microbiology and pharmacology, but surprisingly seems inconsiderate of the fundamentally equal sociology and psychology bases which many would judge to be more essential than, for example, microbiology to the nurse's role of 'care' facilitator.

He reasons that if nursing care is to be provided against a background of knowledge base then every action undertaken by the nurse in the performance of nursing tasks must be clearly understood and justifiable. This would seem a reasonable assumption.

Holford (4), however, argues the complete opposite and suggests that nurses do not need to understand the sciences applied to nursing and need

only commonsense: 'It is for the doctors to provide the rest'

Whatever the scientific bases are which are applied daily to nursing practice, they must be supported by a recognised nursing framework. It is here, adapting theory to practice in a structured manner, which seems to be the major stumbling block in the development of nursing as a profession.

'Whilst nurse tutors teach theory, nurse practitioners go on nursing the way they always have done' (5). The nursing process has been taught for many years now, and its use in practice is no longer questioned, after all, it's often said: 'We're just writing down what we've always done anyway.' The nursing process alone, however, does not provide an adequate framework for nursing practice.

A conceptual model must also be applied. The use of models in the application of theory to practice is probably the most resisted of all changes imposed upon the profession; yet it comes from within the profession itself. **What is a model?** Pearson and Vaughan (6) draw analogies with architect's models and children's model aeroplanes which are three-dimensional representations of reality made up of raw materials such as plastic or bricks. In contrast, models for practice have ideas, beliefs, and knowledge as their raw materials - a descriptive picture of practice which adequately represents the real thing.

**Are models needed for practice?** Pearson and Vaughan argue: if a team of nurses agrees to base its practice on a generally accepted model, it will:

1. lead to consistency in care ... continuity of care patterns and treatments
2. give rise to less conflict within the team
3. make sense of nursing given by the team; other health care workers will understand the logic behind the care
4. give direction to the nursing care for the team - goals will be understood by all
5. act as a major guide in decision- and policy-making



6. act as a guide for the criteria on which new team members are selected

The arguments for points 1-5 are strong and logical, but focus entirely on models from the nurses' point of view. That some models are more suitable for different types of patient, for example, Peplau to psychiatric, Orem to rehabilitative, Roper *et al.* to surgical, Roy to medical (7-10), all of which may be nursed in a single ward area, is not discussed.

The adoption of only one model in any area is almost didactic and certainly does not encompass the current holistic philosophy of nursing care.

It must, therefore, discourage lateral thinking and could contribute to nurses' failing to focus on actual patient problems. Point 6 argues in favour of not appointing staff who disagree with the particular conceptual model used. Such an action would confine the development of knowledge, skills and attitudes in that area, and could promote an insular and blinkered approach to nursing care.

### Are models the answer?

If nurses want to be professional and autonomous, Frissell (11) says that a nursing model is not the answer, and refers to Christman (12) who identifies the prerequisites of autonomy as: control of access of staff and practice privileges; confirmation of background education; regular review of clinical work; standard setting; unrestricted practice; quality assurance; continuing education and active research.

Although Frissell concedes that a model may provide a framework for nursing care, she feels that it's an awkward tool for practice. She supports her claim with the argument that theorists seem to be updating and amending their theories continually and wonders how nurses could ever cope with changing frameworks in the clinical situation.

Models, she says, have confused the definition of nursing, and she would welcome a movement towards a universally acceptable simple concept for

nursing. Initially, Lewis (5) appeared sceptical of the use of models in practice. Once he had chosen and adapted a model for his own ward, however, he felt that such a process could be applied to other models resulting in a greater use of theory in everyday practice, while still retaining the theorist's conceptual framework.

Capers (13) assumes the use of nursing models for practice, but warns that no matter how autonomous nurses are, it must be remembered that nurses do not practise in isolation and do, in fact, interface with more health-care professionals than any other hospital professional group does. She, therefore, advises sharing of information on models with all health care professionals. She emphasises also the need for political astuteness when implementing nursing models and identifies key questions which must first be answered: Is the environment suitable? Which model? What are the expected outcomes of model use? Who will use the model? How will nurses be prepared? How and when will goals be evaluated? What finances are needed?

Luker (14) explores the application of nursing models to community practice and, although she agrees with the need to develop imaginative ways of providing care; feels that this can be achieved independently of models. 'Formal models are a passing craze which community nurses can well afford to miss out on.' She suggests that the detailed assessment provided by theoretical models creates the illusion that clinical practices have been improved when actual delivery of care remains unchanged.

Researching intensive care nursing, Ray (15) identifies a new model: Technological Caring - nursing which involves both human science and human caring. The move towards advancing nursing as a human science, the science and art of caring, is gaining momentum.

Caring, according to Qamar (16) is a concept that has both objective and subjective characteristics:

● objective caring is what a nurse *does* to an individual

● subjective caring is what a nurse *feels* towards an individual

Both combine to form the foundation for nursing practice. She quotes Watson (17) who describes nursing as the philosophy and science of caring. The science of care combines science with the humanities. It is guided by scientific knowledge, methods, and predictions.

### Conclusion

Scientific knowledge does and must form the basis of judgements which nurses make when assessing needs and planning actions. Nurses must be able to explain the reason for any action they take based upon scientific argument. If the knowledge base is not referred to when making decisions, then the action can have no foundation and should be questioned. Referral to a common identifiable knowledge base will enable nurses to have more autonomy and thus improve their standing as a profession. Whether the knowledge base (the science and art of caring) should be framed in a model for nursing practice is still disputed, but there must be a framework to help nurses adapt theory to practice in a logical, structured manner.

The final essential component for a profession must be an accepted philosophy for development of the knowledge base. This can be achieved only through research from within the profession. As Akinsanya (18) says: 'Learners as future practitioners must be encouraged, guided and supported at the earliest stages of their education and training to see research as the cornerstone of a knowledge-based professional practice.'

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## What's on

### Creating healthier communities

April 12-14, 1992

Venue: Disneyland Hotel, Anaheim, California

Details: Request registration form and details from:

The Healthcare Forum, PO Box 44475, San Francisco CA 94344-0001. Postal registrations before March 20, 1992; Phone and Fax registrations through April 6 with American Express/MasterCard/VISA details.

Tel: [USA direct dial] 0101-415-421-8810

Fax: [USA direct dial] 0101-415-421-8837

### Cancer education

The Marie Curie Cancer Education Department aims to improve the quality of life of cancer patients through education programmes for nurses, doctors and other health care professionals and to contribute to a better understanding of cancer, its prevention and treatment. The 1992 schedule has courses listed up to October.

Those for March include:

**The care of the patient with cancer**  
March 4-6, 1992

Venue: Cardiff

**Screening course for practice nurses**

Module 1: March 5-6; Module 2: March 9-10, 1992

Venue: Maidstone, Kent

Module 1: March 19-20; Module 2: March 25-26, 1992

Venue: Wakefield

**Wound and skin care in cancer**

Date to be confirmed

Chair: Ms Jill David

Venue: Newcastle-upon-Tyne

**The care of the patient with cancer**  
March 25-27, 1992

Venue: Hampstead, London

Details: For further information, contact the Education Department, Marie Curie Cancer Care, 11 Lyndhurst Gardens, Hampstead, London NW3 5NS. Tel: 071-435-4305; Fax: 071-794-0213

**First International Conference on Community Health Nursing Research**

September 27-29, 1993

Fields of interest: 'Health Promotion; Illness and Injury Prevention'

Venue: Edmonton Convention Centre, Edmonton, Alberta, Canada

Contact: Ms Karen Mills, ICCHNR, Edmonton Board of Health, 500 10216 124 Street, Edmonton, Alberta, Canada, T5N 4A3. Tel (Edmonton) 403-482-1965.

**New horizons in child care**

April 7-8, 1992

Venue: The University of Leeds

The Seventeenth National Nurses Symposium, organised by Nursing and Midwifery Professional Development, St James's University Hospital Trust and the Department of Continuing Professional Education at the University of Leeds, will take place at the University of Leeds on 7 and 8 April 1992. The Symposium is entitled *New Horizons in Child Care as we Prepare for the 21st Century* and its aims are to 'enable participants to gain an insight into the integration of child care between home and hospital incorporating the needs of the child in the present climate of change'.

Further details are available from: Mrs Hilary Helme, Department of Continuing Professional Education, Continuing Education Building, Springfield Mount, Leeds, LS2 9NG. Tel: (0532) 333233



## Assessing quality of life: the basis for withdrawal of life-supporting treatment?

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FULBROOK P (1992) *Journal of Advanced Nursing* 17, 1440–1446  
**Assessing quality of life: the basis for withdrawal of life-supporting treatment?**

In this paper, the ethical issue is addressed of withdrawing life support by asking the question, 'What is quality of life?' It focuses on the assessment of quality of life, examining how such assessments are made, and highlighting the inability of critically ill patients to participate in decisions regarding termination of their life

### WITHDRAWAL OF LIFE-SUPPORTING TREATMENT

The medico-ethico-legal issue of withdrawing life-supporting treatment is a relatively new phenomenon when considered in historical terms, for it is really within the last 30 years only that the sophisticated medical technology which is necessary for 'life support' has been available. Indeed, intensive therapy units (ITUs) 30 years ago were only a shadow of today's modern technodromes, concentrating mainly on medical support relating to diseases affecting only one vital organ.

One of France's early intensivists, the late Maurice Rapin, recalls his early experiences in intensive care, saying

At that time, as far as I am aware, there was no question of ethical restraint. We accepted virtually all the patients referred to us and, for all of them, we did everything in our power to help

(Rapin 1987)

He suggests that medicine was much simpler then because treatment was usually undertaken for patients with only one organ failure. Thus, if medical efforts were successful then the patient would be able to resume a normal lifestyle. 'There was nothing to lose and everything to gain' (Rapin 1987)

Modern technology and expertise in relation to life support has advanced considerably since Rapin's early

days. Many patients are now surviving illnesses unimaginable 30 years ago. Indeed, intensive therapy facilitates the recovery of people from such things as open-heart surgery, brain surgery and multiple trauma whose prognosis then would have been virtually nil.

### Multi-system support

Advancing technology has seen the development of multi-system support for critically ill patients. Thus, patients whose medical prognosis would previously have been regarded as hopeless are now able to benefit from aggressive medical intervention which is often life saving. Inevitably, such treatment has led to prolonged and protracted deaths for some unfortunate people, who, despite all efforts to save them, have died. There is also a large group for whom survival of aggressive treatment may be regarded as incomplete when assessing quality of life.

The general ethos within the health care professions must be in support of aggressive intensive therapy since it continues to be pursued with increasing vigour. This may relate mainly to man's dominant philosophy regarding sanctity of life resulting in a reluctance to allow people to die 'normally'. Indeed, if statistics are quoted for intensive care survivors they are invariably in terms of survival which says very little about quality of life. Aggressive therapy may even be justified by the medical profession on the basis that something good will have been learnt from



one person's death which may lead to another person's survival in the future. In this way, it is argued, the boundaries of clinical medicine are continually advanced for the 'greater good' a utilitarian philosophy.

Because the technology is available to avert death, the health care professionals who are involved in critical care have had to address several ethical issues as a result. These issues are often centred around the question of whether to continue with or withdraw from aggressive therapy when it is becoming apparent to all those concerned that the likely outcome for the patient will be poor, either in terms of survival or subsequent quality of life. In order for such issues to be addressed fully, in the best interests of the patient, health care professionals must consider the philosophy of their actions.

### Basic ethical questions

Some of the basic ethical questions which must be debated within this context are: What is the meaning of life and what is meant by 'quality of life'? Who and what determines when quality of life is unsatisfactory? Since there are many answers, though rarely any solutions to philosophical enquiry, this paper will attempt only to discuss the above questions.

### WHAT IS THE MEANING OF 'LIFE'?

Rankin-Box (1986) cites the American Woody Allen 'I'm not afraid of dying — I just don't want to be there when it happens', and suggests that his statement identifies two basic fears inherent in Western cultures: the fear of death itself and the fear of the process by which it occurs. Conversely, life must be regarded as very precious. In fact, it is steadfastly clung to, even when its quality might be regarded as poor by the majority of the populous. This concept of preciousness is further supported by man's endless quest for an 'elixir of life', the esteem he attaches to youth, and his reluctance to die, all of which are embodied in the medical science of health.

There is an ethical school of thought which regards all human life as equally precious, whatever its quality as judged by others. Purporters of this 'sanctity of life' view regard the protection and sustenance of life as all important.

Kuhse & Singer (1989) quote Moshe Tendler, a professor of talmudic law

human life is of infinite value — a person who has but a few minutes to live is of no less value than a person who has sixty years to live — a handicapped individual is a perfect specimen

when viewed in an ethical context. The value is an absolute value. It is not relative to life expectancy, to state of health, or to usefulness to society.

This view would therefore seem to suggest that human suffering should be experienced as part of life and as such it would be unreasonable to terminate a life on this basis. Furthermore, if health care professionals were to adhere to this philosophy, decisions regarding who to treat, and for how long, would not have to be made. All patients would be treated regardless of their perceived suffering until they died naturally, or despite treatment.

### Sanctity of life

Sanctity of life is a widespread ethical principle within health care, though it is unlikely that many medical professions would pursue such a principle to its full and logical conclusion, i.e. the preservation of life at all cost. What prevents them from doing so are value judgements regarding quality of life.

The International Code of Medical Ethics (cited in BMA 1988) helps to clarify the position for doctors by stating that 'A physician shall always bear in mind the obligation of preserving human life' and 'The patient has a right to die in dignity' which implies the exclusion of suffering.

Whilst there can be no rigid code by which decisions can be made regarding withdrawal of treatment, the British Medical Association's ethical handbook (BMA 1988) says that doctors must examine each individual case from their own ethical standpoint and, where possible, take into consideration the views of the patient and his relatives. It goes on to state that '... skills and techniques should be offered

when there is a good chance of providing an extension of life that will have the quality that the patient seeks'. What is difficult to determine is the nature of a 'good chance' and the 'quality' the patient seeks. Such concepts are not measurable objectively. Therefore, any decisions made on this basis will be value judgements biased by the person who holds the knowledge base for the treatment, although it is likely that an attempt will also be made to consider the best interests of the patient.

### Person and being

In order to consider fully what is meant by life it is necessary to consider the ideas of person and being. Seedhouse (1988) devotes a chapter of his second book to the discussion of 'person' and the more plausible concept of personhood. He makes the point that 'person' is a technical term used by philosophers to describe beings with certain qualities,



including the ability to value its life. He says that this implies a basic level of autonomy. A person must therefore have a conscious awareness of itself (personhood).

In introducing his chapter, Seedhouse discusses the idea of personhood in the context of switching off a life-support machine, suggesting that if there was no prospect of the person regaining personhood then this would be a major factor in determining whether or not to continue his life. There are very few occasions in clinical practice when it is possible to predict personhood outcome objectively, except perhaps when a medical diagnosis of brain stem death has been made. Even here it is possible to suggest that it is not known for sure if any 'inner life' exists.

The problem is compounded by the fact that personhood is not a static concept and is bound to alter according to a person's situation. It is quite likely, for example, that quadriplegics injured due to trauma may have expressed a wish not to live in such circumstances prior to their accident. Then, having come to terms with their disability, realize the preciousness of life and redefine their own concept of personhood. It is for this reason, perhaps, that living wills have failed to be accepted in this country.

The concept of 'being' is also a complex one since the term implies life. Life implies living but it is not generally accepted that living implies life, since life is measured in human terms. For example, a tree or amoeba may be alive but are not capable of life since they have no concept of personhood.

Being also implies existence. A dictionary definition of being is 'the state or fact of existing' (Hanks 1982). Therefore, a rock exists but it is not a being, it is in a state of being. As such, there is a distinction between the verb 'being' and the noun 'being'.

Applying the above logic to withdrawal of treatment from a seriously ill patient, his existence alone does not qualify his being. It is, however, very important for medical practice to have a "bottom line" — a definition of a valuable life which effectively prohibits immoral treatment of that life' (Seedhouse 1988). This can only be achieved through addressing the human condition, in other words a subjective evaluation of the quality of life.

## QUALITY OF LIFE

The problem when a patient's life is maintained by a life-support machine is that he cannot communicate his quality of life. His family and friends who claim to know him will have some idea of what quality of life means to him and may feel able to reason how he would interpret his current situation if he were able. Their ideas will be shaped by opinions he has expressed to them during his life, and the

degree of insight they have gained into his character during their associations with him throughout his life. What they cannot do is categorically state what his feelings are at that moment.

The ethical concept usually applied in such difficult circumstances is that of beneficence: the desire to do what is considered best for a person. This will include paternalism because in this case it is not deemed possible for the patient to appreciate his best course. Any decisions made will be as a result of a combination of perspectives relating to the patient's best interests. These interests will be considered both in terms of what the patient would say if he were able (substituted judgement) and what participants in the decision would do if they were in the same situation (best interests). The determination of the patient's best interests will inevitably be shaped by societal and cultural norms, and therefore are not readily duplicated when applied to other patients, e.g. in another country or culture.

Quality of life is a difficult concept to measure objectively since it relates to an individual's values and beliefs. It relates in part to rights theory whereby all living people have rights, which include the right to be resuscitated when unconscious (Wear & Brahams 1991). An ethical dilemma arises when there is a conflict in interests because the patient's opinion is not known.

Holmes (1989) published a review of quality of life and health care from the two standpoints of social and psychological indicators. In addressing the fundamental question of 'by what criteria is quality of life judged?' he suggests that social indicators are objective measures whereas psychological indicators are subjective. In reviewing the literature, Holmes concludes that neither objective or subjective data alone are adequate to measure the quality of life, yet both must be taken into consideration.

## Personal happiness

Personal happiness is a measure by which countless philosophers have sought to judge quality of life. Although it is a widely held belief, it is somewhat surprising that personal happiness has not been shown to correspond strongly to levels of health (Holmes 1989). It does, however, appear that positive feeling states such as well-being, happiness and satisfaction remain fairly stable over time and correlate moderately well with each other (Robinson & Shaver 1973, cited in Holmes 1989). Holmes also cites Lehman's (1983) study which suggests that subjective indicators of quality of life are actually measuring something more akin to mental health.

Schneiderman & Spragg (1988) consider the ethical issues surrounding withdrawal of mechanical ventilation



and suggest that the patient's best interests must be served which means addressing his quality of life. They say that this means imagining what benefits a particular patient would appreciate and weighing them against any imposed burdens which he would find intolerable. In this way, however, the line between best interests (what health care professionals think is best for the patient) and substituted judgement (what it is thought the patient wants) becomes blurred. Because of this ethical grey area, the law courts have often been called upon to intervene, especially in North America, in order to make a decision for treatment withdrawal.

So what is quality of life? Dracup & Raffin (1989) suggest that it is

a polymorphous collage embracing a patient's level of productivity, the ability to function in daily life, the performance of social roles, intellectual capabilities, emotional stability, and life satisfaction

This, of course, is all true, but subjective, and very difficult to quantify.

Using the above criteria it could be easily argued that a severely mentally handicapped person's quality of life was poor simply because he or she was unable to fulfil any of the above societal functions. However, if happiness were used as the measure, it is most likely that many such people would be regarded as living fulfilled lives. The problem with mentally handicapped people is finding a way to get inside their minds to assess their 'inner life'. This analogy can be applied to patients sustained by life-support machines, who are unable to communicate.

### Perception of reality

Quality of life, when related to health, has been defined by three components: functional status, perception and symptoms (Dracup & Raffin 1989). Functional status reflects the ability to go about everyday life. Perception reflects the person's view of himself and represents the phenomenological perspective, i.e. that the perception of the reality is more important than reality itself. Symptoms are those experienced by the patient and may relate to either disease or treatment. All three components are interrelated and are constantly changing.

Using these three components, it would be possible to make a fairly objective assessment of the quality of life of a person maintained on a life-support machine. It is only possible, though, to make the assessment by comparing the person's previous quality of life (using the same criteria) with his current state. It is not possible to judge his

outcome since his mental state and hence his perception may change. In other words, (if he should survive) even though his outcome is poor when compared to his pre-disease state he may in fact be happy (as is the mentally handicapped person above). It is only the people around him, who knew him before, who are unhappy and do not consider him to have a good quality of life.

Quality of life is much easier to assess if the person being assessed is able to voice his or her own opinion, since it relates very much to individual perception. The problem when considering withdrawal of life support is that it is very rare that patients are able to offer an opinion at the time when one is needed most. The issue to withdraw treatment becomes an ethical one since the outcome of continuation is not known for certain. The question which is raised is, 'on what basis are decisions to withdraw life support made?'

Further continuation of therapy for critically ill patients starts to become open to question when physiological signs continue to deteriorate in the face of increasing therapeutic intervention, at which point conventionally available therapies have usually been exhausted. A decision to stop treatment is usually a multi-disciplinary one, ethically made (considering all three above components) on the basis of an expected poor quality of life outcome should the patient continue to be treated and survive or the patient is expected to die anyway. From practice there seems to be no particular point in terms of days of 'maximum therapy' at which withdrawal is considered, although it is the author's experience that decisions may be delayed for children and young adults.

Certainly, there is research evidence to support the notion that young lives have more value than older ones (Lewis & Charney 1989). Indeed, aggressive medical intervention, often at the expense of extreme suffering, is often justified in order to save a young life. This may be on the basis that they have their 'whole life ahead' of them and are therefore more valued by society (Kuhse & Singer 1989), and that on the other hand, an older person may already have had a 'full life'.

### Quality adjusted life years

The concept of value of life has been quantified for use in health care. Quality Adjusted Life Years (QALYs) were pioneered by Professor Williams of York University (Williams 1985) and have been widely used for prioritization of health care demands and resource allocation (Heasell 1990). It is based on the concept that one QALY, i.e. 1 year of healthy life, is worth more than 1 year of ill health. Although it could be applied to clinical practice,



QALYs may not be practical because of their statistical bias, for example, one person with 30 QALYs is equal to 30 people with one QALY. Furthermore, it is suggested that their philosophical basis is unsound and that they are ageist, sexist, racist and elitist (Harms 1987). Arguably, however, QALYs are simply a means of 'concretizing' the data that are usually considered when ethical decisions such as discontinuing life support are taken.

It is clear from the above discussion that there is no satisfactory means by which quality of life can be assessed when the withdrawal of life support is being considered. The decision is very much an ethical one, inevitably biased by the personal feelings and opinions of the medical staff involved.

### WHO MAKES THE DECISION TO WITHDRAW LIFE-SUPPORTING TREATMENT?

The final decision to withdraw life-supporting treatment is ultimately taken by a senior member of the medical profession, having taken into consideration ethical issues and objective clinical data. However, a patient's medically deteriorating condition must be evident first for the question of withdrawal of support to be addressed at all. It is somewhat worrying, in the light of published research, that the initial decision is medical. The results of the Poses *et al* (1989) study indicate that there is frequent disagreement among doctors about which critically ill patients are certain to die and which are certain to live. Their results are supported by several other studies which they quote.

On the other hand, objective clinical data based on the APACHE II severity of disease score (Knaus *et al* 1985), calculated daily and modified according to number of organ failures, have been computed to predict outcome of death with 100% accuracy (Chang 1989, Chang *et al* 1988). Even so, it is not accepted for clinical decision making regarding withdrawal of life support by its inventor on ethical grounds (Timmings 1989).

#### Ordinary and extraordinary interventions

Since the ultimate responsibility for making a decision to withdraw medical treatment lies with senior medical staff it is not surprising that

the first decision the physician must make regarding treatment is whether it is medically indicated — that is, whether it will contribute to preserving the patient's life or alleviating his suffering. If it will not, the physician has no reason to use it, and the decision making ends at this level.

(Schneiderman & Spragg 1988)

This statement is still unclear because it suggests that preservation of life is still a priority, thus antagonizing the dilemma between active and passive care.

Roman Catholic theologians have sought to balance the need to preserve life with the need to alleviate suffering by suggesting a distinction between ordinary and extraordinary intervention. Ordinary treatments, e.g. oral hydration, must always be employed whereas extraordinary treatments, e.g. mechanical ventilation, may be foregone (Kuhse & Singer 1989). This philosophy helps to clarify matters but does not define the two terms.

The Jesuit Gerald Kelly (cited in Kuhse & Singer 1989, Emanuel 1988) sought to clarify the terms

Ordinary means of preserving life are all medicines, treatments, and operations, which offer a reasonable hope of benefit for the patient and which can be obtained and used without excessive expense, pain or inconvenience. Extraordinary all medicines, treatments and operations, which cannot be obtained without excessive expense, pain, or inconvenience or which, if used, would not offer a reasonable hope of benefit.

Again, in clarifying terms others become clouded, i.e. in the above statements the terms 'excessive', 'reasonable hope' and 'benefit' are open to personal interpretation. Indeed, one is always forced to return to the central issue: 'Whether a treatment is of benefit depends on whether it can provide the patient with an acceptable quality and quantity of life' (Kuhse & Singer 1989).

At a symposium of physicians meeting to discuss the issue of treatment withdrawal, two important precepts were defined: the patient's role in decision making is paramount, and a decrease in aggressive treatment of the hopelessly ill patient is advisable when such treatment would only prolong a difficult and uncomfortable process of dying (Wanzer *et al* 1984). It is apparent that doctors have the patients' best interests in mind and respect their autonomy. Autonomy is a basic human right based on society's principle of self-determination (Marsden 1990).

As mentioned above, it is rarely possible in intensive care units that patients are able to exercise their autonomy. Ability to make autonomous decisions must be competency-based. It therefore usually befalls the health care professionals to make a decision on the patient's behalf. 'The doctor may know what he thinks he would like done to him if he were in the patient's shoes, but he doesn't know what the patient wants' (Lloyd 1989).

The decision to withdraw life support incorporates the two ethical standards of substituted judgement — where an attempt is made to determine the patient's preferences



based on previous oral or written statements — and best interests — weighing up all the factors and making a decision based on protection of patient welfare, taking into account such factors as suffering and quality/length of life (Marsden 1990)

### Prognosis

In order to expand the concept of best interests, Schneiderman & Spragg (1988) quote from two American court cases

The focal point of decision should be the prognosis as to the reasonable possibility of return to cognitive and sapient life, as distinguished from the forced continuance of that biological vegetative existence

Prolongation of life does not mean a mere suspension of the act of dying, but contemplates, at the very least, a remission of symptoms enabling a return towards a normal, functioning, integrated existence

As well as those of health care professionals, the views of other surrogate decision makers, i.e. relatives and significant friends, should be taken into consideration. In particular to assist with substitute judgements, Marsden (1990) warns of several conditions in which surrogacy should be challenged, i.e. when the family member's motive is unclear

It is part of a doctor's role to be sensitive to whether relatives take part in taking decisions which bring about the death of a loved one however, it is unfair to pass the whole decision to him (Branthwaite, cited in Lloyd 1989)

The importance doctors place on involving relatives in the decision-making process will reflect their position on the paternalism–autonomy continuum, since what is being aimed at is a kind of patient autonomy by proxy

(Lloyd 1989)

The general consensus, however, is that decisions to withdraw life-supporting therapies are medically led, but are directed by an overriding duty to act in the patient's best interests (Wanzer *et al* 1984)

### CONCLUSIONS

From the three areas addressed above it is quite clear that the ethical decision to withdraw life-supporting treatment is a difficult one, but must be a tripartite affair from the joint perspectives of the patient, his family and health care professionals. The four basic, overriding ethical principles in such decisions must be autonomy, beneficence, non-maleficence and justice (Pace *et al* 1991)

It is also clear that there are many questions which have been left unanswered which are beyond the scope of this paper. Questions in relation to the right to live and die must be addressed in much greater philosophical depth, as must the primary issue of whether or not medical professionals should be allowed to 'play God'. This is particularly pertinent in the face of mounting pressure from professionals within intensive care to justify its use (Intensive Care Society 1990, King's Fund 1989)

Of further consequence is the challenge from health service managers regarding (in)appropriate use of limited resources. Even assuming such questions can be satisfactorily moralized, they lead on to additional issues such as the distinction between 'allowing to die' and 'killing'. The philosophical line of enquiry is infinite.

The last word must go to Rankin-Box (1986) who encapsulates the ethical dilemma

death is not the greatest loss in life. The greatest loss is what might have died inside them while they lived

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# Core temperature measurement in adults: a literature review

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## Core temperature measurement in adults: a literature review

This paper provides a comprehensive review of the literature related to the clinical assessment of core body temperature in adults. It does not attempt to address temperature measurement in children. It considers temperature-taking instruments used in current practice, and predominantly investigates the use of the three main sites of rectum, mouth and axilla.

## INTRODUCTION

Accurate monitoring of core body temperature is vitally important in order that changes in patients' status can be detected so that early therapeutic intervention can occur. Disorders in body temperature may indicate the presence of infection, deteriorating patient condition or disorders of thermoregulatory function.

In 1797, James Currie, a Fellow of the Royal College of Physicians, wrote

If a definition of life were required, it might be most clearly established on that capacity by which the animal preserves its heat under the various degrees of temperature in which it lives.

(Cranston 1966)

Man is a homeotherm. In other words he is able to maintain a normal, steady-state temperature under a variety of conditions. He does this by central regulation of body temperature, mediated through temperature receptors located in the hypothalamus. The hypothalamus is sometimes referred to as man's 'internal thermostat', which is thought to be set between 36.9 and 37.1°C. Thermal sweating begins if the core temperature rises above this level (Benzinger 1969).

Approximately two-thirds of the body mass is maintained at core temperature (Woodman *et al* 1967). The remaining third, or shell, regulates core temperature by either gaining or losing heat.

The temperature of any central structure is determined by its own heat production, its insulation from the environment, and the temperature and flow rate of blood perfusing it.

(Cranston 1966)

Thus, it is very important, if core temperature is to be assessed, that an internal cavity is used which is proximal to a major artery. The sites most commonly used in clinical practice are the mouth, rectum and axilla.

## NURSING TEXTS TEMPERATURE MEASUREMENT

Since the need and importance of body core temperature measurement is recognized throughout nursing, it is somewhat disturbing that nursing knowledge and nursing literature in this area is so inconsistent. A literature search of general nursing texts in the author's school of nursing library revealed many non-uniform and perfidious statements, few of which were substantiated with reference to research. For example, Spencer and Tait (1981) state that rectal temperatures are 0.5°C higher than those in the axilla, whilst Crispin (1976) and Middleton (1983), when dictating normal ranges, state that rectal temperature is 1°C above the axilla. Hector (1982) more or less concurs, giving a rectal/axillary temperature difference of 1.1°C. Bennett (1971) and Weber (1988) suggest a 2°F variance.

Closs (1987) surveyed 27 popular nursing texts and found considerable differences in recommended times for



thermometer placement, with only one book quoting values based on research Goodall (1986) compared nine references from his school of nursing's library and noted recommended thermometer insertion times ranging from 1 to 20 minutes

Although the older texts referred to above may be considered outdated, they are nonetheless important because they are current library stock, a fact that is no doubt replicated nationally Nurses wishing to learn about temperature are likely to refer the most accessible source available at the time

Timely, accurate temperature measurement is an essential part of patient assessment in clinical settings Traditionally a nursing function used in planning and evaluating the care of patients However, the techniques used to assess temperature are usually based on individual nursing judgement

(Yonkman 1982, cited in Longman *et al* 1990)

Nursing knowledge, which determines nursing judgements, will be influenced by information gained from nursing texts

## TEMPERATURE TAKING

### Instruments

The measurement of temperature is possibly the most frequently undertaken task by the nurse The sum time taken and thus the economical considerations of such clinical measurements has led to the development of faster electronic instruments The range of equipment currently available for temperature monitoring has expanded considerably since 1867 when the first glass and mercury thermometer was made (Sims-Williams 1976)

The potential for cross-infection has been highlighted with the use of internal thermometers, and has spurred the manufacture of various disposable instruments and sheaths A vast array of electronic probes, mercury-in-glass thermometers, liquid crystal thermometers, tympanic membrane thermistors and pulmonary artery catheter thermistors are now commercially available

Takacs & Valenti (1982) studied nurses' temperature-taking activities over a period of a year, comparing mercury-in-glass with electronic thermometers From the 1080 observations included in their study they observed an alarming range of placement times for mercury-in-glass thermometers (42 s to 9 min 30 s) A narrower range was found for electronic instruments (20 s to 3 min 12 s) as

expected, owing to their more defined end point for insertion time They also found a very high incidence of nurses remaining with patient when recording electronic readings, usually performing nursing tasks, whereas nurses were more likely to leave the room if using mercury-in-glass thermometers Those in the electronic thermometer group were also more likely to record both the pulse and blood pressure during the same period

In the United Kingdom, mercury-in-glass thermometers are subject to British Standard specification BS 691 (BSI 1987), originally published in 1939 These standards safeguard production quality and specify accuracy, although as few as 200 thermometers are required to be tested in a batch size of up to 150 000 There is no quality control standard to measure accuracy in practice or which relates to the age of the thermometer Manufacturers consider that thermometers will be accurate for 10 to 15 years (Sims-Williams 1976)

An American study (Abbey *et al* 1978) researched the accuracy of clinical thermometers of four different manufacturers and found that a quarter of their thermometers were inaccurate after 8 months of use or storage The inaccuracies could not be explained, although it is important to note that the National Bureau of Standards requires an accuracy of  $\pm 0.1^\circ\text{C}$ , which is slightly more marginal than  $+0.1$  to  $-0.15^\circ\text{C}$  of BS 691 Of the 200 thermometers examined by Harden (1964, cited in Sims-Williams 1976) only 20% were accurate to  $\pm 0.1^\circ\text{C}$

### Ambient temperature

The temperature of the external environment is known to affect body temperature Although the heat regulating centre maintains core body temperature by controlling the rate of heat loss through the skin, mainly by adjusting the degree of vasodilation/vasoconstriction of the blood vessels, it can only achieve this within certain limits If ambient temperature falls too low the body is unable to retain heat and may become hypothermic Conversely, the body cannot cope with very high external temperatures and may overheat

Morris (1972) studied heat loss in patients under general anaesthesia and concluded that it could be minimized by maintaining an operating room temperature of  $70\text{--}75^\circ\text{F}$  ( $21.1\text{--}23.9^\circ\text{C}$ ) An earlier study by the same author (Morris 1971) found that all patients who were operated on in room temperatures below  $21^\circ\text{C}$  became hypothermic

The ambient temperature at which a naked human being may comfortably rest, without heat loss, is  $27^\circ\text{C}$  (Lamke *et al* 1977)



## Site choice

Of the sites available for making 'core' deep body temperature measurements — rectum, oral cavity, oesophagus, and tympanic membrane — none is more representative than blood in the pulmonary artery, where the observed temperature is a result of the convective mixing of blood from all over the body

(Bligh 1973, cited in Shellock & Rubin 1982)

If exact core temperature is required then the pulmonary artery is considered the 'gold standard' and is the site of choice

Some authors consider tympanic membrane temperature best represents the core body temperature (Cork *et al* 1983) A study of 20 elderly post-operative patients, comparing pulmonary artery blood/tympanic membrane temperature, found no significant differences between the two sites (Ferrara-Love 1991)

Sims-Williams (1976) reviewed the literature on temperature-taking and suggested that the criteria for site selection should be based on (a) the accuracy of the measurement, and (b) the safety of the patient. She concluded that recordings need to be readdressed, particularly with respect to length of recording time, accuracy of instruments, and criteria for site selection

Blainey's (1974) criteria for site selection include proximity to major arteries, insulation from external factors, e.g. eating, drinking, smoking, absence of inflammation, degree of precision required, patient's status and age. She believes that the sublingual pocket of the mouth is the site of choice. Referring to the axilla only as 'safe and easily accessible', she reserves its use for infants in controlled environments

Opinions regarding thermometer placement times range from 2 minutes (Middleton 1983) to 12 minutes (Nichols *et al* 1966) for an axillary recording and 1 minute (Middleton 1983) to 9 minutes for a rectal recording (Nichols *et al* 1966)

If core temperature is to be monitored then an accurate site should be used. This means using a site which approximates very closely to actual core temperature (i.e. pulmonary artery blood temperature). Ideally, the temperature difference measured at an alternative site should not exceed  $\pm 0.2^{\circ}\text{C}$  which is generally considered clinically significant (Giuffre *et al* 1990). Furthermore, any difference should remain constant under a variety of conditions, e.g. environmental temperature change or breathing effort

The temperature sites most commonly used to assess core body temperature in nursing practice are the rectum, axilla and mouth. These three sites will therefore be reviewed in some depth

## The rectum

Manley (1989) states,

Since the rectum is well insulated from the external environment, rectal temperature is considered most representative of core temperature when using conventional methods of temperature recording

The choice of site for taking temperatures depends on two major factors: the blood supply to the area and how well the site is insulated from outside environmental factors. Since the rectum has a good arterial blood supply via the haemorrhoidal artery, requires least insertion time for optimal temperature (Nichols *et al* 1966), is well insulated and accurately reflects core body temperature, it is the site of choice

Disadvantages to the use of the rectal site, however, may include patient discomfort, pain and embarrassment. Hazards may include mucosal injury, infection and cross-infection. Rectal perforation is a rare complication in neonates (Smiddy & Benson 1969, *British Medical Journal* 1970), but has not been reported in adults

There is also a theoretical potential for bradycardias in response to parasympathetic stimulation (Mathewson 1983). Gruber's (1974) literature review reveals that there is widespread belief that this is a particular problem in patients following myocardial infarction. Her research findings, however, were that no patients had slowed heart rates on thermometer insertion. In fact, of 19 subjects studied, most experienced minor heart rate increases associated with turning onto their side for the procedure, and only one patient experienced a significant rate change — a sinus tachycardia! It is quite likely that these heart rate increases were in response to anxiety and embarrassment caused by the procedure. It may also have been a normal response for some of the patients in the study who were awakened for the procedure. In an earlier study (Earnest & Fletcher 1969) of 86 post-infarction patients who underwent digital rectal examination, no changes in cardiac rate or rhythm were found

Inaccuracies in rectal temperature may be due to the presence of stool, regional ischaemia or inflammation. It has also been reported that the rectal temperature response to changes in core body temperature is not as fast as the oral site (Cranston 1966, Blainey 1974, Erickson 1980)

Rectal temperature has traditionally been considered more accurate than either oral or axillary readings. This is possibly due to the fact that the rectum is better insulated and is thought to be less influenced by external factors (Blainey 1974). Rectal readings are consistently higher than other sites, even pulmonary artery blood which may be



due to the metabolic activity of faecal bacteria (Benzinger 1969, cited in Blainey 1974) However, an early study in which bacterial content was reduced produced no significant reduction in rectal temperature (Rubin *et al* 1951, cited in Blainey 1974)

Eichna *et al* (1951) compared intracardiac, intravascular and rectal temperature in man and found an increasing blood temperature as blood returned to the heart The mean difference between rectal and pulmonary artery blood temperature was  $0.26^{\circ}\text{C} \pm 0.15^{\circ}\text{C}$ , the rectum always being higher than the pulmonary artery blood The difference was greater in patients with higher fevers

Edwards *et al* (1978) found that the rectum responds more slowly than the mouth or oesophagus when the body is exposed to heat In a study of 2410 patients' temperature drop in the operating theatre, Crocker *et al* (1980) found that during the first hour of anaesthesia rectal temperature was on average  $0.6^{\circ}\text{C}$  higher than oesophageal temperature These findings support the notion that the rectum is well insulated

Heidenrich & Giuffre (1990) found a strong correlation between rectal and core temperature ( $R = 0.98$ ), but rectal temperature was on average  $0.5^{\circ}\text{C}$  above core This was probably because all their subjects were surgical patients and a single recording only was taken in the immediate post-operative phase (mean temperature assessment time 18 minutes post-admission to intensive care)

*Other sites* Cranston *et al* (1954) examined the relationship between oral, rectal and oesophageal temperature in man They found a mean difference of  $0.35^{\circ}\text{C} \pm 0.01^{\circ}\text{C}$  between rectal and sublingual temperature for 40 subjects, and a mean temperature difference of  $0.09^{\circ}\text{C} \pm 0.015^{\circ}\text{C}$  (oesophageal higher than sublingual) and  $0.24^{\circ}\text{C} \pm 0.02^{\circ}\text{C}$  (rectal higher than oesophageal) for seven subjects This study was limited by the fact that data were collected over a single 10-minute period only

The same authors (Gerbrandy *et al* 1954) studied the temperature change response for the above sites for changes in cutaneous vasoconstriction and vasodilation They concluded that oral temperature correlated more highly with vasomotor tone than did rectal temperature and state that 'rectal temperature must, therefore, be considered unreliable as an index of body heat'

Royston & Abrams (1982) compared the rectal and oral temperatures in 54 subjects and found a difference of  $0.2^{\circ}\text{C}$  (rectal higher than oral) and concluded that either site is satisfactory for estimation of basal body temperature It is worth noting, however, that the individual women in this study each recorded their own temperatures and therefore the accuracy of measurements was not controlled

An earlier study (Sellars & Voder 1961) found a poor correlation between rectal and oral temperatures Although they recorded 1431 pairs of temperatures, they had only 10 subjects, and the rectal thermometers were only left in place for 3 minutes whereas later research indicates that up to 9 minutes may be needed to record maximum temperature (Nichols *et al* 1966) or 6 minutes if patients are feverish (Nichols & Glor 1968, Nichols *et al* 1972) Of the 60 adults in the Nichols *et al* (1966) study, only 8% had a rectal-oral temperature difference of  $1^{\circ}\text{F}$  ( $0.6^{\circ}\text{C}$ ) as stated in nursing texts at the time

Accurate rectal temperature recording must also address the issue of thermometer placement Blainey (1974) suggests a thermometer insertion depth based on research of 3 inches (7.6 cm) Eichna *et al*'s (1951) probes were inserted 3 inches Mansfield (1971, cited in Sims-Williams 1976) concurs, although this could increase the risk of accidental full insertion since standard mercury-in-glass thermometers are only 4 inches long (10 cm) Lipsky (1986) advises only  $1\frac{1}{2}$  inches (3.8 cm), perhaps based on the work of Nichols *et al* (1972) who achieved accurate results with an insertion depth of  $1\frac{1}{2}$  inches

Benedict & Slack (1911, cited in Mead & Bonmanto 1949) established that from the anus inward the temperature rose to a highest point at a depth of about  $2\frac{1}{2}$  inches (6.4 cm) Mead & Bonmanto (1949) found that rectal temperature fell if a probe was inserted beyond 6 inches (15.2 cm) Abrams & Royston (1981) found no significant temperature differences for rectal probes inserted to depths of 5, 9 and 13 cm

#### *The axilla*

Rosendahl (1981) states,

taking the temperature by the axilla is the last resort when conditions make it impossible to use any other method The axillary temperature is the least accurate

The choice of the axillary site for temperature assessment is not well supported in the literature Although the site is safe and easily accessible it is considered to be less accurate and more easily influenced by the environment and other variables (Cambell 1983)

The axilla should only be used when no other site is suitable and a rough estimate of body temperature is desired

(Closs 1992)

Clarke (1992) questioned 116 general practitioners on the use of thermometers No consensus was found regarding



axillary temperature correlation with oral and rectal temperatures. His survey also failed to identify the role of axillary readings in general practice.

Sims-Williams (1976) asserts that the axillary site is more affected by environmental temperature than other sites (though offers no scientific evidence to support her statement), and also suggests that there is more likelihood of thermometer displacement during recording. Lipsky (1986) advises that the tip of the thermometer should be placed in the centre of the patient's armpit with the arm held firmly at the side.

In a study of 105 elderly women, a temperature variation of 0.2–1.4°C was found between left and right axillae, with the left axilla commonly recording a higher reading (Howell 1972, cited in Sims-Williams 1976). Some researchers have found that axillary temperatures are inaccurate when taken by electronic thermometer (Heidenrich & Giuffre 1990, Ogren 1990).

Cork *et al* (1983) studied 56 intra-operative patients and concluded that the axilla was less accurate than the rectum as a site for measurement of core body temperature. However, they used the tympanic membrane temperature (for which measuring instruments had not yet been validated) rather than pulmonary artery blood as their reference point for 'true' core temperature. Furthermore, they only considered other sites in terms of equivalence rather than constant linear relationship.

George (1965, cited in Nichols *et al* 1966) found large variations between axillary and oral temperatures. Whilst in some individuals simultaneous axillary and oral readings were the same, in others there was a 2°F (1.1°C) difference. The Nichols *et al* (1966) literature review concluded that the 'axillary reading has commonly been considered one degree Fahrenheit (0.6°C) lower than the oral'.

There is some disagreement among authors regarding the insertion time needed to obtain an accurate recording of axillary temperature. Most of the early research in this area was led by an American Army nurse, Glennadee Nichols. Her literature review (Nichols *et al* 1966) revealed that most 'authors agreed on ten minutes as the time necessary for axillary temperature measurement'. Her research compared oral, axillary and rectal temperature relationships in 60 afebrile adults, and found that it took up to 12 minutes for some subjects to achieve their maximum axillary temperatures. Although in general (95%) axillary readings were lower than oral, there was a large range of difference (0–4.2°F, 0–2.3°C). Their study did not support the assumption that there was a 1°F difference between oral and axillary temperatures (Nichols *et al* 1966). It is not clear from the study, however, how accurately axillary and oral thermometer placements were controlled. Body

morphology may be an important factor, particularly for 'emaciated patients in whom skin folds do not easily approximate' (Sims-Williams 1976).

Lipsky's (1986) practical review of temperature-taking advises that axillary temperature generally requires 1 minute longer than an oral reading (which is given as 8 minutes). She gives the following temperature differences: axillary 1°F (0.6°C) below oral, which is 1°F below rectal. Togawa (1985) advises a thermometer placement time of about 10 minutes, and states that axillary readings are always lower than oral ones. He cites the 1983 work of Ilesley *et al* who found 0.2–0.3°C and 0.5–0.6°C temperature differences in afebrile and febrile patients respectively. This study demonstrated that in some individuals axilla temperature continued to increase for up to 10 minutes and 0.2°C over the value recorded at 10 minutes.

**Correlation** An important study (Giuffre *et al* 1990) comparing axilla to core body temperature measured by thermistor technique, i.e. pulmonary artery blood temperature, has determined a significant correlation. They conclude that axilla temperatures measured with mercury thermometers consistently correlate with core body temperature, i.e. axillary temperature is 0.19°C below core temperature. This finding supports their earlier research into post-operative temperature measurement (Heidenrich & Giuffre 1990), when the mean difference reported was 0.2°C. Results from both studies were based on an axillary thermometer insertion time of 10 minutes.

These findings are supported by the author (Fulbrook 1992) who took 4-hourly, simultaneous temperature recordings at the axilla, rectum and pulmonary artery blood for 16 patients admitted to intensive care. In his study, axillary thermometers were inserted for 12 minutes. His results also showed an axillary/pulmonary artery blood temperature difference of 0.19°C (axilla was the lower value), and a rectal/pulmonary artery blood temperature difference of 0.1°C (rectum was the higher value). He concluded that there was a very strong, constant and parallel linear relationship between the three temperature sites of rectum, axilla and pulmonary artery blood.

Based on a larger sample of 31 patients whose axilla and rectal temperatures were compared (finding a difference of 0.32°C), Fulbrook found that the temperature relationship remained constant for men, women, elderly people, post-operative and non-operative patients, number of temperature samples taken, and irrespective of peripheral temperature — which varies according to cardiac output and peripheral perfusion (Henning *et al* 1979, Joly & Weil 1969).



If the statistical findings found in the above studies are replicated in future research, it may be of immense clinical significance since they contradict traditional assumptions and imply that changes in clinical practice should occur. These studies are limited, however, by the number of variables considered. More research is needed to establish the accuracy of axillary temperatures for all client groups, measuring many more variables (a fact conceded by Giuffre *et al* 1990).

#### *The mouth*

The temperature below the tongue increases as the posterior sublingual pockets are approached, which are the recommended sites for oral temperature recording (Lipsky 1986). The main advantage of using these sites is their close proximity to the deep lingual artery which runs along the bottom of the tongue and the sublingual artery which runs along the floor of the mouth. Both are branches of the lingual artery which is itself a branch of the external carotid artery. Because of this close relationship, the sublingual pockets respond very quickly to changes in core body temperature (Blainey 1974).

This theory has been scientifically demonstrated by Gerbrandy *et al* (1954) who infused warm infusions intravenously and separately immersed the extremities of his subjects in a hot bath. Of the 17 subjects studied, the sublingual temperature provided a reliable indicator of changes in body heat which correlated closely with the amount of heat induced.

Nursing literature generally supports oral temperature recording as the most useful means of estimating core body temperature (Blainey 1974), even though many inaccuracies have been highlighted. It is argued that the oral temperature is most convenient, responds most keenly to core body temperature changes and is therefore the preferred method of temperature estimation.

It is generally agreed that oral recordings are less subject to environmental temperature changes than skin recordings

(Sims-Williams 1976)

Perhaps the most significant risk to patients from oral temperature measurement is cross-infection, either from other patients when inadequately disinfected thermometers are used, or as a result of thermometer contamination during storage. Lipsky's (1976) study showed that dry storage of thermometers allows bacterial colonization in very large numbers after use. Disposable covers may be employed to reduce the risk of cross-infection since their use has been shown to have a negligible effect on the accuracy of the recording (Graves & Markarian 1980).

Contra-indications to the use of oral thermometers include elderly, demented and epileptic people where the risks relate to broken thermometers, and may include mercury ingestion (for which the morbidity is minimal) or broken glass, which may cause lacerations or be swallowed. Oral measurement is not advised for patients who have had recent oral surgery or who have current oral infection because increased heat production owing to local inflammation will influence the accuracy of the thermometer reading in relation to core temperature.

**Accuracy** The duration of recording time and the position of the thermometer in the sublingual pocket of the mouth is crucial to the accuracy of oral readings. It is also important for the lips to remain sealed (Sims-Williams 1976).

Data from Nichols' series of six studies in temperature measurement from 1966 to 1969 were collated and analysed to determine oral thermometer placement times (Nichols & Kucha 1972). Of the 390 subjects studied, the time taken for an oral thermometer to reach its maximum temperature was from 1 to 12 minutes. They created new categories for placement times based on 90% of the sample, eventually deriving optimum placement times of 8 minutes. These groups are nevertheless artificial, and if an accurate reading is required for *all* patients then the thermometers must stay in the mouth for 12 minutes.

At the time of Nichol & Kucha's (1972) research only 3 minutes was recommended for placement time. Only 13% of their sample reached a maximum temperature in this time. A finding of one of the earlier studies mentioned above (Nichols & Verhonick 1967) was that no more than 12 minutes was needed to record maximum oral temperature, even if room temperature is reduced to 65°F (18°C). A relatively recent review of temperature measurement (Togawa 1985) still advises a sublingual thermometer placement time of about 3 minutes.

Inaccuracies in oral temperature measurement are many and include sublingual site selection, duration of thermometer insertion (Baker *et al* 1984, Nichols *et al* 1966, Nichols & Veronuck 1967, Nichols & Kucha 1972).

Recent ingestion of iced water has been shown to reduce oral temperature by up to 1.6°F (0.9°C) but only 5 minutes elapsed before the thermometers were removed (Woodman *et al* 1967). In the same study the effect of smoking on oral temperature was studied, but produced small changes which were not significant clinically. Forster *et al* (1970) found that the oral temperature was reduced for up to 15 minutes after drinking iced water.

Other factors which might influence the accuracy of oral temperature include recent eating, mastication or teeth cleaning.



Owing to air flow through mouth and upper airway, it is presumed that breathing rate and inspired air/oxygen temperature will affect sublingual temperature. Numerous researchers have studied this aspect of temperature monitoring and are adequately critiqued and summarized by Longman *et al* (1990).

Durham *et al* (1986) examined 53 patients in a medical intensive care unit, of which 33 were tachypnoeic (defined by a respiratory rate of  $> 20$ ). A *t*-test revealed a significant difference in rectal versus oral temperature for the tachypnoeic and normal breathers. The normal group had a mean temperature difference of  $0.69 \pm 0.13^\circ\text{F}$  ( $0.4 \pm 0.07^\circ\text{C}$ ) whereas the tachypnoeic group had a mean temperature difference of  $1.3 \pm 0.14^\circ\text{F}$  ( $0.7 \pm 0.08^\circ\text{C}$ ).

An earlier, larger work by Tandberg & Sklar (1983) researching the oral-rectal temperature difference for normal ( $n=118$ ) and tachypnoeic patients ( $n=192$ ) found even greater differences between the two groups: normal,  $0.53 \pm 0.04^\circ\text{C}$ , tachypnoeic,  $0.93 \pm 0.05^\circ\text{C}$ . A more recent study of 78 subjects (Neff *et al* 1989) controlling for open and closed mouth breathing, and using tympanic membrane temperature as a reference, concluded that sublingual temperature changes are unrelated to breathing rate or depth, but depend on whether the mouth is open or closed.

Chang (1985) measured oral and axillary temperatures for pursed-lip breathers and compared them with diaphragmatic and pursed-lip breathers. Although there were no statistical differences between the two groups there were significant temperature changes over the 15-minute breathing period. In both groups, the oral temperature fell about  $0.2^\circ\text{C}$ , and in the diaphragmatic/pursed-lip breathers axillary temperature rose by about  $0.4^\circ\text{C}$ . This axillary increase may be due to the fact that diaphragmatic breathing is a form of exercise and involves considerable work which may increase body heat.

**Oxygen administration** Lim-Levy (1982) investigated the effect of nasal oxygen administration at rates of 2, 4 and 6 litres/minute and found no statically significant changes. Hasler & Cohen (1982) measured oral temperature in 40 healthy volunteers breathing oxygen via aerosol mask, venti-mask, nasal prongs or normally in room air. All subjects had their temperature monitored while breathing for 15-minute periods in each of the described circumstances. No statistical or clinically relevant temperature changes were found in oral temperature during oxygen administration.

Dressler *et al* (1983) found a clinically significant difference of  $0.8^\circ\text{C}$  between rectal and oral temperature for a group of 30 post-operative cardiac patients receiving oxygen by face mask. They also conceded that rectal tempera-

tures were a statistically more stable means of measuring core temperature.

Lukasiewicz's (1986) limited literature review concludes that oxygen therapy does not significantly affect oral temperatures, and advises that face masks need not be removed for the purpose of oral temperature-taking.

Recent investigations have shown that the relationship between rectal and oral temperature remains constant at about  $0.5^\circ\text{C}$  when patients are orally intubated (Cashion & Cason 1984). This difference, whereby the rectal temperature was consistently the lower of the two, may be related to the fact that all the patients in the study were post-operative and hypothermic.

Naso-gastric intubation had been shown statistically not to influence oral temperature when the rectal temperature is used as a reference point (Heinz 1985). Although there was no statistical difference, it should be noted that the range of difference was up to  $3.1^\circ\text{F}$  ( $1.7^\circ\text{C}$ ) which is clinically significant.

The temperature relationships between the mouth and the rectum and axilla are discussed in the sections above. Ilesley *et al* (1983), in a small study involving five pre-operative subjects, found that oral temperature was about  $0.4^\circ\text{C}$  below simultaneously measured pulmonary artery blood temperature. A more recent study (Audiss *et al* 1989) of a slightly larger group of subjects with pulmonary artery thermistors calculated a mean difference of  $0.37^\circ\text{C}$  between oral and pulmonary artery blood temperature. Only four of their patients showed a statistically strong correlation, however, with three showing no correlation. The correlations were independent of systemic vascular resistance which was also measured.

Erickson & Yount (1991) compared oral with tympanic membrane temperatures and found a moderate correlation. Of the 60 patients they studied, body temperature was higher at the tympanic site in 99% of measurements. The mean difference in temperature between the two sites was  $0.6-0.8^\circ\text{C}$ .

Since there are so many possible variables relating to the accuracy of oral temperature measurement, the risk of cross-infection and the fact that it is not *actual* core body temperature which is being measured, it seems prudent for patients whom temperature assessment is important that an alternative, more accurate site is used.

## DISCUSSION

From the literature review it is evident that there is still a considerable lack of clarity regarding which of the three commonly used sites are most appropriate for core body temperature monitoring.



The oral site, of the three, is generally preferred yet its accuracy appears to be influenced by most variables. It may also carry the greatest risk from cross-infection. Of the three sites it would seem to be the quickest to respond to internal temperature changes.

The rectum, whilst maintaining a strong correlation with true core body temperature, is not readily accepted in Western society, and is associated with embarrassment and related anxiety. It also carries several risks, owing to its invasive nature, which are potentially harmful to patients. It is least affected by external variables such as ambient temperature or breathing effort.

The axilla is particularly unfavoured in nursing texts, based on presumptions that it is slow to react to internal temperature changes, and is more susceptible to environmental changes which affect its correlation with core body temperature. It is the least researched of the three sites, although some recent studies have supported its clinical accuracy.

Historically, most of the research which relates to temperature monitoring was done in the 1960s and 1970s, and relates to the use of mercury-in-glass thermometers. In the 1980s, there has been more of a trend to use electronic temperature probes and infrared tympanic thermometers in clinical practice, which has been reflected by their use in research. Their accuracy for clinical use, however, has yet to be validated. Recently, owing to the increased use in intensive care of invasive pulmonary artery catheters with electronic thermistor temperature tips, core temperature can be precisely monitored. The 'gold standard' of pulmonary blood temperature has therefore been used to compare the accuracy and linear correlation of the more commonly used sites.

### Equivalence

An important consideration when comparing sites for body temperature measurement is their equivalence. If a temperature site approximates core temperature (pulmonary artery blood) to within  $0.2^{\circ}\text{C}$  then it is generally accepted as valid for clinical practice. Such small differences are insignificant and would not affect medical treatment decisions or nursing care interventions.

Body temperature conforms to a circadian rhythm (Samples *et al* 1985, Davis & Lentz 1989, Tweedie *et al* 1989). The potential differences between sites have yet to be assessed for variance according to circadian acrophases. Temperature also varies according to hormone levels. The effect of menstruation in relation to the accuracy of different sites must also be investigated.

Body temperature is particularly important in the elderly population who may have diminished physiological heat-recovery abilities, such as reduced shivering or vasoconstriction (White *et al* 1987). Such deficiencies could affect the temperature relationship between sites. Elderly, frail and unwell patients may be particularly at risk to hypothermia if exposed to a cold environment.

### Further research

Most studies of temperature have been conducted in controlled environments where the ambient temperature is 'normal' or warm, e.g. intensive care, and have also based their results on 'normal range' temperatures. Furthermore, many studies have measured the temperatures of healthy (and often relatively young) volunteers.

Further research should be undertaken to determine temperature relationships at extremes of body temperature, in elderly people, and subject to a variety of environmental conditions. The need for such work is highlighted by Darowski *et al* (1991) who measured body temperature at four different sites in elderly afebrile hospitalized patients, using a variety of instruments, and found clinically significant variances.

### CONCLUSION

It is nearly 20 years since Sims-Williams (1976) conducted her review of the literature relating to temperature taking and concluded that

some areas relevant to temperature recording have not been investigated thoroughly [and that] Recordings need to be reconsidered, particularly from the viewpoint of length of recording time, but also in using criteria for selection of suitable recording sites and in the accuracy of instruments.

Nursing research and nursing practice seem to have made little progress beyond her conclusions. Indeed, despite the wealth of research that has been undertaken on temperature measurement, nursing's knowledge base regarding this everyday, routinized practice seems less clear.

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## Core temperature measurement: a comparison of rectal, axillary and pulmonary artery blood temperature

Paul Fulbrook

This research study was undertaken to determine the relationship between pulmonary artery (PA) blood temperature, rectal temperature and axillary temperature for adult patients admitted to an intensive care unit (ICU).

31 adults had their temperatures monitored. Simultaneous recordings of PA blood temperature, rectal temperature and axillary temperature were taken every 4 h for up to 7 days.

The mean difference between rectal and axillary temperature for all 31 patients was 0.32°C. Of the 16 patients who had their PA blood temperature monitored mean rectal temperature was 0.1°C above PA blood temperature and mean axillary temperature was 0.19°C below PA blood temperature. Very high statistical correlations were obtained which demonstrate the strength of the relationships between the three sites (rectal-axillary temperature difference  $R = 0.97$ ; PA blood-rectal temperature difference  $R = 0.99$ ; PA blood-axilla temperature difference  $R = 0.97$ ).

The linear relationship between the three sites studied was not found to be affected by age, gender, number of temperature samples taken, post/non-operative admission or peripheral temperature.

### INTRODUCTION

Accurate monitoring of core body temperature is vitally important in order that changes in patients' status can be detected so that early therapeutic intervention can occur. Disorders in body temperature may indicate the presence of infection, deteriorating patient condition or dis-

orders of thermoregulatory function. Arguably, the accurate monitoring of core body temperature is nowhere more important than in intensive care where patients are often immunocompromised and may be at greater risk of infection.

'Of the sites available for making "core" deep body temperature measurements . . . none is more representative than blood in the pulmonary artery, where the observed temperature is a result of the convective mixing of blood from all over the body.' (Bligh, 1973 cited in Shellock & Rubin 1982)

If exact core temperature is required then the

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pulmonary artery is considered to be the 'gold standard' and is the site of choice. Under normal monitoring conditions, due to the highly invasive nature of the monitoring equipment, it is not possible to measure PA blood temperature. Thus it is very important, if core temperature is to be assessed, that an internal cavity is used which is proximal to a major artery. The sites most commonly used in intensive care are the rectum and the axilla.

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## LITERATURE REVIEW

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This review is a brief summary of the literature which relates to the three temperature sites of rectum, axilla and PA blood. Whilst some of the literature might be considered outdated (particularly some nursing texts), it is nevertheless important because it originates from current library stock. For a more detailed review of core temperature assessment see Fulbrook (1993).

An accurate site should approximate very closely to actual core temperature (i.e. PA blood temperature). Ideally, the temperature difference measured at an alternative site should not exceed  $\pm 0.2^{\circ}\text{C}$  which is generally considered clinically significant (Giuffre et al 1990).

Rectal temperature recordings are generally considered to reflect core body temperature accurately. Spencer & Tait (1981) state that rectal temperatures are  $0.5^{\circ}\text{C}$  higher than those in the axilla whilst Crispin (1976) and Middleton (1983), when dictating normal ranges, state that rectal temperature is  $1^{\circ}\text{C}$  above the axilla. Hector (1982) gives a rectal/axillary temperature difference of  $1.1^{\circ}\text{C}$ ; Bennett (1971) and Weber (1988) suggest a  $2^{\circ}\text{F}$  ( $1.1^{\circ}\text{C}$ ) variance.

Rectal readings are consistently higher than other sites; even pulmonary artery blood, which may be due to the metabolic activity of faecal bacteria (Benzinger 1969 cited in Blainey 1974). However, an early study in which bacterial content was reduced produced no significant reduction in rectal temperature (Rubin et al 1951 cited in Blainey 1974). Eichna et al (1951) compared intracardiac, intravascular and rectal temperature in man and found the mean difference between rectal and PA blood

temperature was  $0.26^{\circ}\text{C} \pm 0.15^{\circ}\text{C}$ ; the rectum always being the higher value. The difference was greater in patients with fever.

The axilla is particularly unfavoured in nursing texts, based on presumptions that it is slow to react to internal temperature changes and that it is more susceptible to environmental changes which affect its correlation with core body temperature. It is the least researched of the three sites, though some recent studies have supported its clinical accuracy (Giuffre et al 1990; Heidenrich & Giuffre 1990).

Rosendahl (1981) states that: 'taking the temperature by the axilla is the last resort when conditions make it impossible to use any other method. The axillary temperature is the least accurate . . .'

The choice of the axillary site for temperature assessment is not well supported in the literature. Although the site is safe and easily accessible it is considered to be less accurate and more easily influenced by the environment and other variables (Campbell 1983). Sims-Williams (1976) also asserts that the axillary site is more affected by environmental temperature than other sites, and Closs (1992) states that: 'The axilla should only be used when no other site is suitable and a rough estimate of body temperature is desired'.

Nichols et al's (1966) literature review concluded that the 'axillary reading has commonly been considered  $1^{\circ}\text{F}$  ( $0.6^{\circ}\text{C}$ ) lower than the oral' although their research did not support this assumption. 20 years later Lipsky's (1986) practical review of temperature taking advises the following temperature differences: axillary  $1^{\circ}\text{F}$  ( $0.6^{\circ}\text{C}$ ) below oral, which is  $1^{\circ}\text{F}$  below rectal.

A recent study (Clark 1992) surveyed the opinions of 116 general practitioners on the use of thermometers. He could find no consensus as to whether axillary temperatures correlate well with either oral or rectal readings and failed to identify the role of axillary readings in general practice.

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## PURPOSE OF THE STUDY

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This study was undertaken to determine the temperature relationship between the rectum,



**Adult** – patient aged 16 years or more.

**Rectal temperature** – that temperature which is recorded 4-hourly from a continuous temperature display and is obtained by placing the well lubricated rectal probe of an electronic thermometer into the anal canal along the rectal wall to a depth of 7–8cm.

**Axillary temperature** – that temperature which is recorded 4-hourly, intermittently and is obtained by placing the bulb of a standard 'normal range' mercury thermometer into the centre of the axilla, and left in place for a period not less than 12 min with the arm firmly positioned to the side.

**Peripheral temperature** – that temperature which is recorded 4-hourly from a continuous temperature display, and is obtained by taping the probe of an electronic thermometer to the underside of the big toe.

Fig. Definition of terms.

axilla and pulmonary artery blood, which are all measured in critical care clinical practice to indicate core body temperature.

Because the axilla temperature is measured at the skin surface it could be subject to the influence of a reduced peripheral perfusion which is often related to a reduced cardiac output. Great toe temperature correlates linearly with cardiac output (Joly & Weil 1969; Henning et al 1979). As an indicator of peripheral perfusion the skin temperature at the big toe was therefore measured. Ambient temperature is also known to affect core temperature and was recorded in order to ensure that it remained constant during the period of study.

It was hypothesised that there would be no significant clinical differences between the three core temperature sites and that the accuracy of the axilla would be affected by peripheral perfusion.

## METHODOLOGY

The subjects were all patients admitted to a single ICU during a 3-month-period. Intensive care patients were chosen because they commonly have rectal temperature monitored, and ward patients very rarely have pulmonary

**Pulmonary artery blood temperature** – that temperature which is recorded 4-hourly from a continuous temperature display, and is obtained from a thermistor in the distal tip of a pulmonary artery catheter sited in the patient's pulmonary artery.

**Electronic thermometer** – the Hewlett-Packard 400 series thermometers – temperature range –40 to +100°C; accuracy  $\pm 0.1^\circ\text{C}$  from 0°C to 70°C (rectal temperature probe: HP21075A; surface temperature (peripheral) probe: HP21078A) for use with Hewlett-Packard's Merlin monitoring system (Hewlett-Packard Company, California, USA).

**Mercury thermometer** – Zeal 'normal range' (i.e. 35–42°C) mercury-in-glass thermometer; maximum error +0, 1°C/–0.15°C standardised to BS:691 (1987).

**Pulmonary artery catheter** – Baxter Edwards Health Care Corporation Swan-Ganz catheter 93A-831-7.5F (Edwards Critical-Care Division, USA).

artery blood temperature monitored. Furthermore, the ICU had electronic technology readily available to record highly accurate rectal, peripheral and pulmonary artery blood temperatures.

## Subjects

Data were only collected from adult patients whose rectal temperature would normally have been measured and whose physiological condition warranted it. Conscious patients were excluded from the study.

## Procedure

The instruments for temperature measurement are described in the Figure. Internal validity of the electronic instruments was accepted according to the manufacturer's high specifications. Mercury thermometers were tested using an East Radcliffe thermostatically controlled water bath. Thermometers were placed in the water bath for 12 min at three different temperatures. Highly accurate electronic temperature probes (HP21078A) were placed with their tips proximal to the mercury bulbs of the thermometers. The temperature of the water was thus constantly monitored. The monitoring system was programmed to record the water temperature



every minute. The highest temperature recorded by the probes over the 12-min-period was used as the reference temperature for comparison of the thermometer readings. The procedure was repeated with the water bath heated to approximately 35, 37 and 40°C. Any thermometers whose accuracy did not conform to British Standard 691 (BSI 1987) were rejected.

PA catheters were inserted as described by Shellock & Rubin (1982). Their position in the pulmonary artery was checked daily by chest radiograph.

Rectal, axillary, peripheral and ambient room temperature were routinely recorded for all patients as described in the Figure. If a patient had a PA catheter in situ then PA blood temperature was also recorded (Fig.). Data were collected by the nurse looking after the patient at the time and recorded on a simple chart kept at the patient's bedside. Temperatures were taken simultaneously (i.e. rectal + axilla + peripheral + room  $\pm$  PA blood = 1 sample group), 4-hourly at set times i.e. 2 a.m., 6 a.m. and so on, until discharge or for a maximum period of 7 days for each patient.

Due to the long period of the study and the frequency of temperature sampling it was not practical for a single person to collect all the data. All ICU nurses were therefore participant in the measurement and recording of observations. Specific written guidelines regarding positioning of temperature probes/thermometers were issued to each nurse.

## RESULTS

A quantitative approach was used. Data were analysed by computer using the Statistical Package for Social Scientists (Bryman & Cramer 1990). The subjects were considered in two groups for data analysis.

### Group 1

31 subjects were entered into the data analysis. The mean age of the subject group of 23 males and 8 females was 62.9 years (SD 17.1; range

22–84). The number of temperature sample groups (which were used to calculate individual mean temperatures) ranged from 2–40 (mean 19; SD 13). Grand means were then computed, giving the mean rectal, axilla and peripheral temperatures for all subjects from which average temperature differences between rectum and axilla and rectum and periphery were calculated (Table 1).

Pearson's correlation coefficients were calculated to establish the relationship between rectal, axillary, and peripheral temperatures and age.

A highly statistically significant straight line relationship between rectal and axillary temperature was found ( $R = 0.98$ ,  $P = <0.001$ ). This does not imply that they are the same, but that the difference between them (i.e.  $0.32^{\circ}\text{C} \pm 0.15$ ) is consistent. No statistically significant relationship was found between any of the other measured variables.

Utilising a *t*-test, the difference between the means of the independent variables of age (<65 or >65), gender, non-operative or postoperative admission and the number of temperature groups sampled (6 or less or >6), were tested against the dependent variable of rectal-axillary temperature difference (Table 2). No statistically significant (or clinically significant) temperature differences were found.

### Group 2

With group 2, 16 subjects also had PA blood temperatures recorded; mean temperatures were calculated. Based only on data recorded simultaneously to their PA blood temperature recordings mean averages for rectal and axillary temperatures were then recalculated. The number of temperature sample groups taken from each patient ranged from 2–30 (mean 14, SD 10). The grand means were again computed to give average temperatures for all subjects and were used to calculate the average temperature differences between the sites (Table 3).

Pearson's correlation coefficients were calculated for group 2 to establish the relationship between rectal, axillary and PA temperatures. The straight line relationships between rectal



**Table 1**  
Mean temperatures and mean temperature differences for Group 1 (°C)

	Mean	SD	Min	Max	n
Rectal temperature	37.45	0.70	36.00	38.85	31
Axilla temperature	37.13	0.67	35.80	38.11	31
Peripheral temperature	31.38	2.05	27.18	34.11	31
Rectal/axilla temperature difference	0.32	0.15	0.03	0.76	31
Rectal/peripheral temperature difference	6.07	2.24	2.65	10.12	31

**Table 2**  
Mean differences between rectal and axilla temperature (°C)

Independent variable	n	Mean	SD	Significance
Age <65	13	0.3108	0.049	
Age >65	18	0.3263	0.032	ns
Male	23	0.3206	0.033	
Female	8	0.3173	0.046	ns
Postoperative	17	0.3093	0.032	
Non-operative	14	0.3325	0.047	ns
Temperature <7 samples	8	0.3196	0.038	
>6	23	0.3198	0.034	ns

ns = not significant.

**Table 3**  
Mean temperatures and mean temperature differences for Group 2 (°C)

	Mean	SD	Min	Max	n
Rectal temperature	37.62	0.68	36.48	38.70	16
Axilla temperature	37.33	0.61	36.40	38.24	16
PA blood temperature	37.52	0.65	36.42	38.51	16
Rectal/axillary temperature difference	0.29	0.17	0.07	0.60	16
PA blood/axillary temperature difference	0.19	0.16	-0.10	0.47	16
Rectal/PA blood temperature difference	0.10	0.09	-0.02	0.28	16

and axillary temperature ( $R = 0.97$ ;  $P = <0.001$ ), rectal and PA blood temperature ( $R = 0.99$ ;  $P = <0.001$ ) and PA blood and axillary temperature ( $R = 0.97$ ;  $P = <0.001$ ) are highly statistically significant and indicate that the differences between them are consistent.

## SUMMARY

### Group 1

Mean rectal and axillary temperature were calculated for each patient. The mean values from all patients were then combined to calcu-

late a single mean temperature for each site. By subtracting the mean axilla temperature from the mean rectal temperature a mean difference of  $0.32^{\circ}\text{C} \pm 0.15$  was found. The strength of this relationship was tested using Pearson's Product Moment Correlation and was found to be very strong ( $R = 0.98$ ;  $P = <0.001$ ). The same test revealed no correlation between patients' age, peripheral temperature and any of the temperature sites. Furthermore, the magnitude of the difference between rectal and peripheral temperature (sometimes referred to as the toe-core gap) was not shown to influence the rectal-axillary temperature relationship.



Further scrutiny of the data using the *t*-test demonstrated the rectal-axillary temperature difference to be independent of two age groups i.e. <65 or >65, gender, non-operative versus postoperative admission groups, or the number of temperature sample groups recorded for each patient.

## Group 2

Accepting PA blood temperature as the reference point for true core body temperature, its relationship to rectal and axillary temperature was determined.

The mean difference between rectal and PA blood temperature was  $0.1^{\circ}\text{C} \pm 0.09$  (rectal temperature was the higher value). The strength of this linear relationship was again found to be highly significant ( $R = 0.99$ ;  $P = <0.001$ ). The mean difference between axillary and PA blood temperature was  $0.19^{\circ}\text{C} \pm 0.16$  (axillary temperature was the lower value). Again, the strength of this relationship was highly significant ( $R = 0.97$ ;  $P = <0.001$ ). For this smaller group of patients the rectal-axillary temperature difference was  $0.29^{\circ}\text{C} \pm 0.17$  ( $R = 0.97$ ;  $P = <0.001$ ).

The influence of the independent variables of peripheral temperature, age, gender etc was not tested for because the data analysis from group 1 had already shown that they do not influence the rectal-axilla relationship.

## Hypotheses

The hypotheses that no significant variation exists between the difference in axillary, rectal and PA blood temperatures for normally perfused adult patients in intensive care are supported.

However, the hypothesis that axillary temperature does not correlate closely with rectal temperature when the peripheral temperature is low is not supported. The relationship between the three core sites measured remained constant when peripheral perfusion, as indicated by a low big toe temperature, was poor.

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## DISCUSSION

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The findings of this study indicate that there is a very strong, constant and parallel linear relationship between the three temperature sites of rectum, axilla and pulmonary artery blood. It also suggests that this relationship remains constant for men, women and the elderly, and does not alter when the peripheries are cold and poorly perfused.

An important consideration when comparing sites for body temperature measurement is their equivalence. The findings of this study indicate that either the rectum or the axilla is an accurate site for measurement of core body temperature since both closely approximate to PA blood temperature within  $0.2^{\circ}\text{C}$ . A variation within this range is acceptable for use in clinical practice because such small differences are not clinically significant and would not affect medical treatment decisions or nursing care interventions.

Although a constant temperature difference between the rectal and axillary sites of around  $0.3^{\circ}\text{C}$  has been demonstrated in this study, larger differences may be found in very thin people where the axilla pocket is hollow. It is possible that air temperature in the pocket could be measured rather than skin temperature proximal to the axillary artery. A lower reading might also be obtained if the thermometer is inserted lower down than the uppermost part of the axilla. Also, if the thermometer is inserted for less than the recommended 12 min it may not record maximum temperature. Although nurses were issued with written guidelines for the research procedure, stipulating insertion times, this was not controlled in the field.

Nurses were not instructed which axilla to use for temperature monitoring. It is likely therefore that both axillae will have been used for most patients, which may have affected the results. Large temperature differences between right and left axilla of up to  $1.4^{\circ}\text{C}$  have been reported (Howell 1972 cited in Sims-Williams 1976).

The findings of this study compare favourably with Heidenrich & Giuffre's (1990) study of the relationship between rectal, axillary and PA



blood (core) temperatures. They studied 18 postoperative patients admitted to intensive care and found that axilla temperatures were on average 0.2°C below core ( $R = 0.96$ ). Their mercury-in-glass thermometers were left in place for 10 min. As with this study they found a stronger correlation between rectal and core temperature ( $R = 0.98$ ), but the temperature difference was greater, with rectal temperature on average 0.5°C above core. This finding may be related to the fact that all their patients were postoperative, and temperature assessment was based on a single recording measured within the immediate postoperative phase (mean temperature assessment time 18 min post admission to intensive care). The much higher rectal values may be related to the rectum's insulation properties when the core is cooled. Higher rectal values (0.6°C, in relation to oesophageal temperature) have been reported in anaesthetised patients as they cool intra-operatively (Crocker et al 1980). This larger difference has not been found in postoperative patients in this study. This may be due to the fact that serial temperatures were taken to calculate mean values, which may be a more accurate reflection of the temperature relationships between the sites. Average temperatures were calculated from data collected over a period of up to 7 days, by which time the effects of relatively rapid cooling in theatre will have been reversed. No patients in this study were hypothermic.

Giuffre et al (1990) studied the relationship between axilla and PA blood temperature in 30 non-operative ICU patients and found a mean temperature difference of 0.19°C – identical to this study – although their correlation was less strong ( $R = 0.90$ ). As with the same author's previous study (Heidenrich & Giuffre 1990) only one paired temperature was recorded for each patient, and thermometers were left in place for 10 min.

The findings in this study of a mean axilla-core temperature difference of 0.19°C compare very favourably with the above two research studies. The similar findings may be related to the use of mercury-in-glass thermometers for axilla measurements, rather than electronic probes

which have been shown to be inaccurate for axilla measurements in children (Ogren 1990). More significant, perhaps, is that thermometers were left in place for an adequate length of time. Previous studies which have reported poor correlations between the axilla and other core sites may not have used long enough insertion times.

This study has shown that the temperature relationship between rectum and axilla is the same for males and females. The strength of this finding is limited, however, by the fact that there were only eight females in the study. Further research with groups more equally matched for gender may reveal differences. The female sample in this study may have been too small to reveal hormonal temperature variations which are known to affect women during ovulation.

Body temperature conforms to a circadian rhythm (Davis & Lentz 1989; Samples et al 1985; Tweedie et al 1989). The data from this research suggests that such rhythms do not affect the differences between the three sites measured. The minimum period over which temperatures were recorded was 4 h (2 samples). Data recorded over less than a 24-hour-period (6 samples or less) showed that the average temperature differences were maintained between the rectal and axillary sites. If circadian acrophases affected the relationships it is likely that this would have been demonstrated in the patients who had fewer samples taken.

Body temperature is particularly important in the elderly population who may have diminished physiological heat recovery abilities, such as reduced shivering or vasoconstriction (White et al 1987). Such deficiencies could affect the temperature relationship between sites. In this study, however, the relationship between rectum and axilla remained constant for both the over and under 65-year age groups. Furthermore, 72% of the subjects were over 65 years old.

Elderly critically ill patients are particularly at risk to hypothermia if exposed to a cold environment. The ambient temperature of the ICU used for this study was strictly controlled. Simultaneous recording of ambient temperature during the research period revealed that it never fell below 21°C and on average was 23°C. It is



possible therefore, that in colder environments the relationship between core, rectal and axilla temperatures may not be maintained. This may be true for all age groups but is more likely to affect the elderly.

The finding that peripheral temperature did not influence the rectal-axillary relationship was unexpected. It was anticipated that the skin at the axilla would be subject to similar temperature variations as those seen at the periphery in relation to poor peripheral perfusion. This finding is, however, significant for practice. It means that the axilla is a reliable site for core temperature assessment however poorly perfused the patient is. This assumption has not been tested for hypothermic patients in this study, so can only be applied to patients with a core temperature in the range 35–40°C.

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## CONCLUSIONS

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This study has concluded that both the rectum and axilla are highly accurate sites for the estimation of core body temperature. The accuracy of these sites prevails for age, number of temperature samples taken, gender, post- and non-operative admissions to the ICU. The implications are that invasive sites commonly used to measure temperature, in particular the rectum and mouth, need not be used. The axilla site is a close enough approximation and does not vary under a variety of conditions.

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## RECOMMENDATIONS

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From this study it can be recommended that the axilla is routinely used to measure core body temperature. This site is preferred because axillary temperature measurement is a simple, non-invasive procedure which does not carry the same hazards or infection risks of other sites. The axilla may be a more accurate site than the mouth for temperature estimation since it is not subject to such variables as eating, drinking and breathing.

These findings may be applied to the ward setting, and it is recommended that ward nurses

seriously consider the axilla as the site of choice for temperature monitoring.

In the ICU a change of practice is recommended. Currently most units routinely monitor rectal temperature with invasive electronic probes. Although accurate it carries risks, may be embarrassing and is costly. It is recommended that for routine core body temperature assessment, when exact estimations are not required, the axillary site is used. Furthermore, it is possible that rather than measure axilla temperature intermittently with a mercury-in-glass thermometer, skin surface temperature probes, sited at the axilla – constantly monitoring temperature – could be used, though further research is recommended to establish their accuracy.

If mercury-in-glass thermometers are used a minimum insertion time of 12 min is recommended since this has been shown in this study to produce temperatures which correlate very strongly to core body temperature.

Although the data from this study show that rectal temperature more closely approximates core temperature than axilla temperature further research is recommended, particularly at lower room temperatures, to see if this relationship is sustained. Further research is also recommended to determine the relationship between right and left axilla temperatures, and whether or not one or the other more closely approximates core body temperature.

Replication studies are also suggested with larger, matched subject groups. So far most work has used patients as subjects. The temperature relationships between sites must also be assessed for healthy people.

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rent parts of the country took part. They were all interviewed to elicit their views on their GPs. Six obtained health care from a department of genitourinary medicine, two did not feel the need to register with a GP, and 46 had just moved home, and were still unregistered.

Of the 623 men with their own GP, 44% had not informed their doctors of their sexual orientation. Seventy-seven men were HIV-antibody positive, but 44% of this group had not told their GPs. In both groups, disclosure was made less likely by an apparently unsympathetic view of homosexuality by the GPs.

Over a third of registered men had discussed HIV and/or AIDS with their doctors, and this was mostly on their own initiative. Over a fifth reported what they believed to be 'inappropriate' or 'insensitive' comments made by their GP, while 19 men reported specific negative statements.

The researchers note: 'One factor that may improve communication with this group of patients is the perceived attitude of practitioners toward homosexual lifestyles.'

Fitzpatrick, R., Dawson, J., Boulton, M. et al. Perceptions of general practice among homosexual men. *British Journal of General Practice* 1994; **44**: 379, 80-82.

## IN BRIEF

**A SCALE** for measuring feeding difficulties in patients with dementia has been developed in Edinburgh.

A study looked at 112 older people in whom dementia has been diagnosed and who were being cared for in a long-term hospital setting. Nurses involved in feeding patients were asked to complete a questionnaire. The information was then used to identify particular causes of difficulties, and the EdFED scale (Edinburgh Feeding Evaluation in Dementia) was constructed.

The scale is still at a very early stage of development but it is hoped that a useful tool will eventually evolve.

Watson, R. Measuring feeding difficulty in patients with dementia: developing a scale. *Journal of Advanced Nursing* 1994; **19**: 2, 257-263.

## SHORT REPORTS

### A COMPARISON OF TEMPERATURE MEASUREMENTS

Fulbrook, P. Core temperature measurement: a comparison of rectal, axillary and pulmonary artery blood temperature. *Intensive and Critical Care Nursing* 1993; **9**: 4, 217-225.

Core body temperature may be accurately monitored by measurements of the axillary temperature, despite the fact that many nursing texts routinely suggest that such measurements are not truly representative. This assumption is based on the belief that changes in the axillary temperature lag behind alterations in core temperature, and that environmental changes may affect readings in a misleading way.

To determine the relationship between temperatures recorded rectally, in the axilla, and in the pulmonary artery (PA) — the gold standard for true core temperature — a study was conducted in an intensive care unit (ICU).

All adult patients admitted to one ICU over a three-month period were eligible for inclusion if their condition warranted rectal monitoring of temperature. If a PA catheter was in place, PA blood temperature was also to be recorded. Over the study period, 31 patients were enrolled and PA blood temperature monitoring was possible in 16 of these.

The mean age of the 23 men

and eight women was 62.9 years (standard deviation 17.1, range 22-84). Axillary temperature was recorded by placing a mercury 'normal range' thermometer, tested for accuracy, in the centre of the axilla, for a minimum period of 12 minutes, with the arm positioned firmly against the patient's side.

Rectal temperatures were recorded by placing the rectal probe of an electronic thermometer into the anal canal, to a depth of seven to eight centimetres. For 16 patients, PA temperature was monitored via a thermistor located in the distal tip of a pulmonary artery catheter.

Peripheral temperature was also recorded, by taping the probe of an electronic thermometer to the underside of the big toe.

A straight-line relationship was found between rectal and axillary temperatures, which was highly significant ( $p < 0.001$ ). The difference between the two was very consistent ( $0.32^{\circ}\text{C}$ ,  $\pm 0.15^{\circ}\text{C}$ ). When PA temperature was recorded, straight-line relationships were also evident between all three readings, and all were significant at the  $p < 0.001$  level. Axilla temperature was found to be  $0.2^{\circ}\text{C}$  below true core temperature. However, this difference is not clinically significant and validates the use of the axilla site.

The relationships were not affected by gender and age, nor did variation in peripheral

temperature have any effect.

These findings suggest that invasive methods of temperature recording, via mouth or rectum, need not be used in preference to axillary measurement, providing the thermometer is left in place for the minimum 12 minutes.

Further research is now needed to compare measurements in matched subject groups and in healthy subjects.

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### UNDERSTANDING SICKLE CELL DISEASE

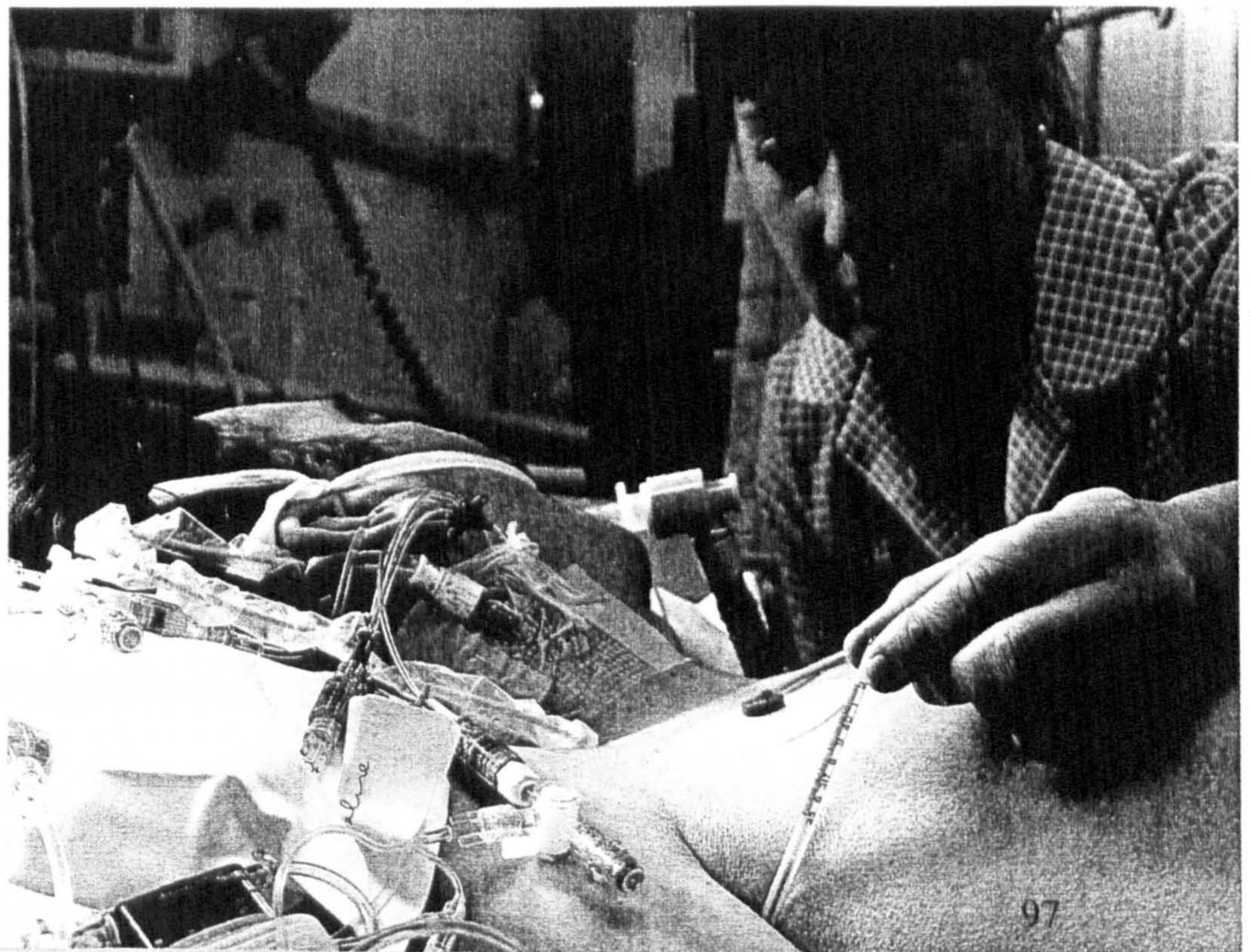
Midence, K., Graham, V., Acheampong, C., Okuyiga, E. Increasing awareness for higher quality care: measuring knowledge of sickle cell disease in adult patients. *Professional Nurse* 1994; **9**: 4, 255-258.

People with sickle cell disease (SCD) may not always have as full an understanding of the condition as they might wish. But the value of educational programmes is limited if health-care professionals' knowledge is also wanting.

To establish the level of knowledge among SCD patients — something which seems not to have been researched before — a study was carried out at the Brent Sickle Cell Centre in London.

The centre has an 'open door' policy and provides educational material to patients and members of the public who request it. A

#### Axillary temperature was consistently found to be $0.2^{\circ}\text{C}$ below true core temperature





BMJ 1994;308:412 (5 February)

## Letters

### Intensive care for children

EDITOR, - We support the call for improved national paediatric intensive care services<sup>1</sup> and the principles outlined in the British Paediatric Association's document<sup>2</sup>; however, the method of achieving this should not be oversimplified. As Shann observes, a substantial number of children receive no intensive care,<sup>3</sup> emphasising the failure of many to appreciate the benefits of early referral to intensive care units. Increasing the number of paediatric intensive care beds will not resolve this issue unless an increase is linked to improved postgraduate training. Tertiary centres can contribute to this process only if suitably experienced consultants are recruited in sufficient numbers. Without these, opening a paediatric intensive care unit will not, in itself, guarantee the appropriate quality of care. There is a need for more paediatric intensive care beds, but many children admitted to intensive care units do not require services unique to teaching hospitals. Where high standard facilities already exist, it makes little sense to move patients elsewhere.

We agree that a fully comprehensive paediatric intensive care service cannot be organised at a district level, but we believe that high quality paediatric intensive care can be provided within a district hospital. In our district, the intensive care nursing team is led by a sister who has both ENB 100 and RSCN qualifications. Sixty percent of our nurses hold an intensive care diploma; of these, 30% have received training in paediatric, intensive care. Single cubicles are used preferentially, and paternal participation is encouraged. Treatment is supervised by full time intensivists with specific training in paediatric intensive care. Our training posts attract high calibre medical staff with experience in paediatrics, anaesthesia, medicine, or surgery. The Regional Paediatric Advanced Life Support course, based here, has considerable input from our intensive care team, and together with our local university we have established one of Britain's few "Principles of paediatric intensive care nursing" ENB 920 courses. As it is important to recognise limitations as well as capabilities, we have also developed a sophisticated transport system which allows us to transfer any patient who requires treatment or investigation that cannot be provided locally.

We hope that paediatric intensive care services will be rationalised but in our view, it will still be necessary for larger general intensive care units to continue to care for children, using criteria which define when transfer is appropriate. It is clear from our own experience that critically ill children can receive high quality care in district if it is provided by appropriately trained attendants who offer the necessary commitment.

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1. Dilner L. **Children's intensive care is poor, says report.** *BMJ* 1993;307:1444. (4 December.)
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[\[Medline\]](#)



## Assessing mental competence of patients and relatives

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FULBROOK P (1994) *Journal of Advanced Nursing* 20, 457-461

### Assessing mental competence of patients and relatives

This paper presents a discussion on the assessment of mental competence of patients and relatives in the health care setting. Their decision-making ability is explored with particular reference to the giving of consent for nursing intervention and medical treatment. It is suggested that, in addition to obvious psychological or neurological disorders, decision-making ability will be influenced by psychological stress and the ability to communicate effectively. It highlights the ambiguity of mental competence assessment and concludes that such assessments will, to a greater or lesser extent, be subject to value-laden judgement.

### INTRODUCTION

Patients and relatives are now arguably better informed regarding health care and their rights. The desire to ensure that this continues to be the case is exemplified throughout the British government's *Patients Charter* (Department of Health 1991) and indeed the United Kingdom Central Council *Code of Professional Conduct* (UKCC 1992). In addition to the twin drives of government policy and professional accountability, society in general has developed an increased awareness with respect to a person's right to self-determination. This is reflected by a population which not only needs to know more about the health care it receives but has an increasing expectation that decision making should be both fully informed and collaborative.

Progressively, and somewhat in advance of developing society, the health care professions have come to recognize and respect the autonomy of individuals. As such, there has clearly been a shift away from prescriptive nursing care towards a more negotiated contract which emphasizes the meeting of an individual person's health-related needs.

### Psychological disorders

These parallel developments have inevitably led to many more situations where patients and relatives are involved

in decision making regarding treatment and care. However, it should not always be assumed that individuals are *competent* to make decisions. Examples of health care settings where this might pose a problem are mental health, where psychological disorders might impair intellectual functioning, and intensive care, where invasive interventions and the use of sedative drugs make communication very difficult.

Assessment of mental competence is of major concern to health care professionals in many aspects of clinical practice: for example, shared decision-making, self-care, empowerment, and, in particular, giving consent.

Mentally compromised patients are unable, or not allowed to, exercise their autonomy to its fullest extent because the ability to make autonomous decisions must be competency-based (Fulbrook 1992). In such circumstances it is often the relatives who are asked to shoulder the burden of surrogate decision making on the patient's behalf. However, one must not always assume that relatives are mentally competent to do so for, in times of crisis, they may be suffering from transient (or persistent) psychological stress which may affect their rational judgement. For example, this might often be the case during the acute phase of a patient's sudden illness and/or admission, for whilst the patient enters hospital in a state of biological crisis the family enters in a state of psychological crisis (Roberts 1986).



## WHAT IS MENTAL COMPETENCE?

A working definition of the general concept of competence might be 'the ability to perform at a certain level' This definition could be applied equally well to either skills or mental competence However, it is very difficult to assess competence as the term is ambiguous and open to individual interpretation Thus the limits of objectivity by which competence is qualified would seem to be dependent on the objectivity of the standard by which it is measured

It is possible to define mental competence by considering what is not competent Incompetence is 'a legal term referring primarily to defects in intellectual reasoning such that comprehension of the nature of a transaction is interfered with or otherwise inadequate' (Campbell 1989) From this definition it is clear that factors such as psychological stress could render people incompetent to make decisions

When a stressful event such as life-threatening illness is experienced, a number of human responses are evoked which reflect coping and adaptive behaviour

When the event taxes or exceeds the individual's resources and is thus stressful, personal and environmental resources are called forth in an attempt to cope Commonly, though not always, there follows a period of alternating confrontation with and retreat from the impact of the event During this period, there are unusual levels of both the intrusion of ideas and numbing of emotions, which appear to fluctuate in particular ways to each person

(Younger 1991)

Invariably this will affect a person's decision-making ability

## ASSESSING MENTAL COMPETENCE

'Competence, like truth, beauty and contact lenses, is in the eye of the beholder' (Laurence J Peter & Raymond Hull, cited in Cohen & Cohen 1980)

When competence is judged it is usually on the basis of observed performance measured over a period of time However, it cannot be assumed that on all subsequent occasions thereafter a person will act competently Furthermore, whilst behavioural standards may be relatively easy to measure, because they are judged according to performance-based criteria (Ellis 1988), it is much more difficult to assess mental competence

Mental competence is not easily measured and may require expert analysis Objective criteria such as intelligence quotient tests, cognitive examinations or behavioural performance skills can be set, but are inappropriate tools for most applications in clinical practice They may also be inadequate because they are unable to measure aspects such as rationality, intention or deceit and ignore the potential for psychotic behaviour Thus, setting criterion-referenced standards for mental competence is problematic Hence, in clinical practice the assessment of

mental competence essentially becomes a value judgement based on societal and personal values—or norm referencing (Hepworth 1989)

## Ethical debate

The issue of mental competence is also raised for ethical debate since

the capacity to be autonomous is sometimes referred to as competency—that is competence to make particular choices Competence is a property of an individual determined by a personal normative standard In other words it is a value judgement that varies from moment to moment and situation to situation

(Wear & Brahams 1991)

To respect autonomy is to allow [people] to make choices according to the principles that they would will for themselves

(Fry 1987)

The principle, in other words, is that autonomy should not be subject to restrictions or limitations imposed by others However, society only allows freedom of expression and action with certain acceptable limits

It is proposed, therefore, that competence is also a question of conformity Whilst there is a perceived right for an individual to make his own decisions, his mental competence may be called into question if the consequences of his decisions fail to conform to normal expectations of society at large Hence, there may be a conflict between a person's personal normative standard, and society's consensus normative standard When such a conflict exists, the overriding decision is most likely to go to the person(s) who hold(s) the most power—often related to their knowledge, which may be perceived as 'expert' or 'authority' (Robinson 1992) If power at local level fails to make a decision a higher power may be consulted, for instance a legal judgement may be required to resolve the dilemma

Personal experience and anecdotal evidence from colleagues suggest that the question of a patient's competence is rarely raised unless there is an issue of noncompliance One such example is given by Wear & Brahams (1991) who cite a real-life case of a diabetic with a gangrenous foot refusing surgical treatment His mental competence to deny treatment is called to account However, if he had agreed to the suggested operation it is unlikely that his competence to do so would have been questioned The question again raised is is mental competence a measure of conformity? Similar concern is expressed by Twining (1992) in relation to mental competence in elderly people He asks the question what happens when the patient's decision contradicts that of the mental health team?

Davis & Underwood (1989) have a similar view Their exploration of competency in relation to informed consent led them to state that

As long as an individual is alert, ambulatory, and gives no



evidence of verbal incoherence, his competence to give informed consent will probably not be questioned. This is particularly true if the person agrees to whatever intervention health professionals propose.

In addition, they cite Green (1984) who suggests that individuals with long-standing mental illness are automatically presumed incompetent even though there is no empirical evidence to support this, and it has no foundation in law.

### Legal aspects

Competence is a legal judgement, which is used internationally in law to assess fitness to plead, and testamentary capacity (American Psychiatric Association 1980, Koenigsburg 1989). In the case of fitness to plead, the court needs to assess the mental abilities of the accused, in particular his ability to understand the proceedings and the possible consequences resulting from the court case if he is found guilty. His mental capacity to assist his lawyer by giving relevant information in support of his case is also assessed. Wear & Brahams (1991) suggest that this legal framework can be applied to medical cases when a patient's ability to consent for treatment is questioned on the basis of his mental competence.

In an attempt to quantify mental competence, a number of assessment tools have been developed. Michels (1982) specifically addressed competence to refuse medical treatment, and offered a framework for assessment of mental competence (Table 1). Whilst it is a helpful tool which would seem to have practical applications, it is essentially value judgement couched in scientific objectivity. As such it could result in a large number of otherwise socially com-

**Table 1** Framework for assessing mental competence reproduced from Michels (1982) edited by Doudera & Swazey, *Refusing Treatment in Mental Health Institutions: Values in Conflict*, Aupha Press, Arlington, Virginia pp 117-118

- |   |   |
|---|---|
| 1 | The person's knowledge that he has a choice to make   |
| 2 | The patient's ability to understand the available options, their advantages and disadvantages   |
| 3 | The patient's cognitive capacity to consider the relevant factors   |
| 4 | The absence of any interfering pathologic perception or belief, such as a delusion concerning the decision  |
| 5 | The absence of any interfering emotional state, such as severe panic, depression, euphoria, or emotional instability  |
| 6 | The absence of any interfering pathologic motivational pressure, such as irresistible rage  |
| 7 | The absence of any interfering pathologic relationship, such as the conviction of helpless dependency on another person   |
| 8 | An awareness of how others view the decision, the general social attitude toward the choices, and an understanding of his reason for deviating from that attitude if he does so |

petent people being declared incompetent because they refused treatment (Wear & Brahams 1991).

Roth *et al* (1977) investigated the use of tests for mental competence and identified five categories: evidence of using choice, reasonable outcome of choice, choice based on rational decisions, ability to understand, and actual understanding. In relation to consent they also identified two models, objective and subjective, where the objective model is based on a comparison with a 'reasonable' person and the subjective model, which is much harder to verify, is based on a person's 'actual' understanding. Whichever model is chosen to analyse mental competence to make a decision, the outcome will invariably be dependent to a greater or lesser degree on the assessor's personal philosophy, and his or her stance with regard to the limitations of a person's right to self-determination.

In many respects this can be likened to areas such as intensive care and severe learning difficulties when patients are unable to communicate adequately and a surrogate decision is required.

The importance doctors place on involving relatives in the decision-making process will reflect their position on the paternalism-autonomy continuum, since what is being aimed at is a kind of patient autonomy by proxy.

(Lloyd 1989)

Competence, it can be argued, is a relative concept which

bears little or no relationship to underlying psychiatric diagnosis and will vary in degree according to the magnitude or significance of the action under consideration. Thus a person of low intelligence might be considered competent to handle and manage a weekly wage of \$20, but considered incompetent to manage a trust fund of \$20 000.

(Campbell 1989)

### Personal and value laden

The capacity to make decisions is judged in relation to the importance of the decision. In this sense, levels of competency might operate in health care practice. For example, if a person chooses not to follow the advice of a doctor to have an ingrowing toenail removed, it is likely that his decision will be unquestionably respected. However, if this same person refused medical advice to have a life-saving operation, his mental competence might well be questioned. Yet, if this person's mental state was assessed prior to asking for his consent—and he was judged competent—it should make no difference what operation is advised, his decision should be respected, even if he chooses to say no.

Buchanan & Brock (1989) pursue the notion of levels of competence and describe three categories of mental capacity: (a) the ability to understand and communicate,



(b) the ability to reason and deliberate, (c) a set of values of what is good and bad, which has been stable over time. Whilst it might be a relatively simple academic exercise to differentiate between these groups, it is hard to define levels. In clinical practice it would be very difficult to use such categories consistently. People are multi-faceted and cannot be compartmentalized in this way. The outcome of assessment of competence will be shaped by their self-projection, the way they project their character and personality, which in turn is dependent on the perception of another individual for interpretation. Assessment of competence is inevitably a personal, value laden opinion.

## DISCUSSION

For a person to have a perceived ability to make decisions, a judgement of mental competence is necessary. Assurance of a person's mental competence is vitally important if he is to be considered competent to give consent. An accurate assessment of mental competence is particularly important in all areas of health care where patients and relatives alike are subject to psychological crisis or disorder, or have a limited ability to communicate effectively.

The professional trend towards collaborative (i.e. nurse-patient) health care has tilted the philosophical balance away from paternalism to autonomy with respect to clients. More often clients are required to make decisions, even though there is a persistent view within society that responsibility for health lies with the health care team when the individual becomes a patient (Jacobs 1990). There is some evidence to support this notion (Waterworth & Luker 1990).

Collaborative decision making has paralleled the advancement of the concepts of empowerment and self-care in client care. Whilst these concepts are admirable in that they pursue the philosophical desirability of client autonomy, a word of caution should be expressed. Assessment of a person's mental competence should include an appraisal of his or her psychological well-being which is relevant to ability and need to partake in decisions. Nurses 'must not expect them to care for themselves in situations when we ourselves would like to be cared for' (Webb & Merritt 1989). In this context, mental competence to make decisions may only be possible as a consequence of *mastery* which has been described as 'a human response to difficulty or stressful circumstances in which competency, control, and dominion have been gained over the experience of stress' (Younger 1991).

## CONCLUSIONS

Mental competence is a dynamic concept which is extremely difficult to quantify with respect to decision making. Although 'many ethical dilemmas could be avoided by formalizing the patient's wishes before an alter-

ation in mental status occurs' (Harper & Dimitrakopoulos 1992) this is rarely possible because what is true today might not be true tomorrow (Walker & Avant 1988).

Competence is not an all-or-nothing entity, you are not either competent or incompetent, you are competent to do a particular task or take a particular decision.

(Twining 1992)

As such, the criteria to assess mental competence vary from situation to situation and require both objective and subjective analysis with specific relevance to the competency being judged. Assessment of competence is therefore not a simple undertaking and most often will require expert intervention. Certainly, the Law Commission (1991) has highlighted the fact that the assessment of mental competence is a very grey area which would benefit from clarification.

## Intuition

Health care professionals are in a position to get to know patients well and many could be regarded as expert enough to judge human mental competence, within the boundaries of constraint identified above. Indeed, regardless of legal duty there is overriding moral and professional duty to ensure that clients are competent to take the decisions they are asked to make. Whether decisions are great or small they should be preceded by an assessment of mental competence. This assessment is not quantifiable, but may benefit in analysis from a guiding framework or does it just require what Benner (1984) describes as 'intuition'?

This paper has explored the problems inherent in assessing mental competence. It has demonstrated how difficult it is to define criteria which could be successfully used in practice and has concluded that even if predetermined standards are used to judge mental competence they are problematic and inevitably value laden. Thus, the assessment of mental competence, by its very nature, will always be ambiguous.

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# Specialist practice

## An educational perspective

Paul Fulbrook

### Abstract

- The UKCC's plans for post registration education (PREP) became effective from April 1995 and defined several areas of specialist practice, of which only one, general specialist practice, will cover all acute and hospital based nursing.
- The paper outlines and discusses the issues of educational preparation for specialist practice and its relationship to current Level 2, and Level 3, and Higher Award programmes.
- The financial viability of the PREP reforms will be based on the purchasing power and intentions of the Trusts, and the proportion of practitioners needed to work in the capacity which requires a specialist qualification.

**Keywords:** Specialist practitioner, General specialist practice, UKCC Post Registration and Education Plans (PREP), Level 2, Level 3, Higher award programmes, Core and specialist options, Training needs analysis: purchasing intentions.

Specialist practice is very important for the profession to consider at this particular point in time, and there are wide ranging implications for nurses who are working in critical care areas. The UKCC (1994a) has defined several areas of specialist practice, of which there are eight in the community (Table 1) and only one which will cover acute or general specialist practice – the area where most critical care nurses work. It is therefore unlikely that there will be, for example, intensive care or coronary care specialist practitioners designated by their UKCC registration. All such specialists will be covered by the generic term of 'specialist practitioner'.

The UKCC's Post-registration and Education (PREP) (UKCC 1994b), of which specialist practice is only a part, became effective as of April 1995. The UKCC (1995a) states that specialist practitioners:

'will exercise higher levels of judgment, discretion and decision-making in clinical care. They will be able to monitor and improve standards of care through supervision of practice, clinical audit, the provision of skilled professional leadership and the development of practice through research, teaching and the support of professional colleagues.'

Specialist programmes, therefore, must be aimed at developing such practitioners. The UKCC envisage that individuals will work towards specialist qualifications (presumably within their preferred specialty) at first degree level (level 3), which lead to a registrable specialist qualification (confirmed by the ENB 1995a). The mandate for level 3 programmes is undoubtedly part of a wider intention for an all-graduate nursing profession. Such programmes have yet to be developed, but may be in place in some institutions in October 1995 (ENB 1995b). These programmes will need to be flexible to accommodate the wide ranging requirements of many different specialists but are expected to contain common elements (ENB 1995c).

By September 1998 all specialist courses leading to a specialist qualification should be at level 3 (first degree)

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(ENB 1995b). Educational institutions, therefore, have three years to develop such programmes. Perhaps the important question to ask is, what will happen in the interim period before these programmes come on line? There will have to be transitional arrangements to ensure that proper recognition is given to the qualifications of those nurses who are currently working in specialties, already possess ENB clinical specialist qualifications and who may also be very experienced in their specialty.

It may be possible that through presentation of portfolios the combination of a level 2 qualification with significant clinical experience will enable some nurses to register as specialist practitioners without undergoing a level 3 programme of education. This is an extremely difficult area, particularly when attempting to demonstrate that level 3 outcomes have been achieved within an individual's experience. It is also a very time-consuming exercise for both portfolio preparation and assessment, which because of its high subjectivity is best undertaken by a recognised panel of experts. The UKCC have stated that 'new programmes of education offering a specialist practitioner qualification can be accepted for recording at diploma, as well as first degree level.' However, 'This will only apply to those cases where previously no recordable qualification has existed, for example, general practice nursing' (UKCC 1995b).

**Table 1. Community specialist practice areas**

1. Community mental health nursing	5. Public sector nursing
2. Community paediatric nursing	6. Community home nursing
3. Community learning disabilities nursing	7. Occupational Health nursing
4. School nursing	8. General practice nursing

**Table 2. Key areas of specialist practice**

1. Specialist clinical practice	3. Clinical practice leadership
2. Care and programme management	4. Clinical practice



**Table 3. Common features of the Higher Award and specialist nursing programmes**

1. The use of credit and accumulation transfer schemes (CATS)
2. The need to prevent repetitious learning through effective use of APL/APEL
3. Achievement of professional outcomes at degree level
4. A recognition that not all practitioners will need or want to achieve this level of educational preparation
5. A need for practitioners to complete a period of professional practice before moving to this level of education
6. Flexibility of provision which will enable the educational needs of practitioners to be met.

The UKCC suggests that the specialist programme should be flexible, which means moving away from traditionally rigid ENB style courses that are run over a set period of time, with set content. New specialist programmes will be a minimum length of 32 weeks full-time spread over an academic year (or their part-time equivalent) although some nurses, through accreditation, may reduce their length of study by up to 50% (ENB 1995b). All courses will be approved by the relevant national board and will accredit prior experience and learning.

A modular approach, with flexible learning strategies and part-time educational opportunities, probably incorporating an open-ended approach whereby learning programmes may be accessed or left at any point without loss of credit would, be a suitable way forward.

The ENB suggest that there should be a common core of preparation, which will form no less than one third and no more than two thirds of the programme (ENB 1995b). The UKCC (1994a) identify the areas which they see as being a common core (Table 2). Whichever specialist pathway the individual embarks upon, whether for general specialist practice or one of the many community pathways, it is probable that there will be a common core of learning material across all pathways. There is a clear emphasis on clinical practice, with the ENB confirming that within specialist programmes there should be a 50/50 theory/practice division (ENB 1995b).

The learning outcomes for the four key areas of specialist practice have been clearly identified in the registrar's letter of December last year (UKCC 1994a). It is likely that educational programmes will be developed in which there are a number of different pathways which may be taken, which will all ultimately lead to the qualification of specialist practitioner for the individual. What educational institutions have yet to do is to develop modules from which the individual can select what he/she feels is appropriate to his/her own personal development and learning needs for their own area of specialist practice. How specialist programmes will fit into the current array of level 3 awards available for nurses is unclear. In addition to the Higher Award (which may be studied at first degree and master's degree level) there are many bachelor's programmes. The choice for specialist study is compounded by the range of ENB courses available (most of which are at level 2). It may well be the case that existing level 2 ENB courses will either be developed and upgraded to level 3, or will be phased out completely. If either scenario develops there are serious implications for many nurses working in specialist areas

who have no level 2 credit which will be required in order to access part-time level 3 studies.

There needs to be a more flexible approach by educational institutions when considering advance standing of individuals, ie, recognition of the individual and what they have personally achieved. Institutions should exercise greater flexibility to enable access to level 3 studies on the basis of experience and personal development. The current accreditation of prior experience and learning (APEL) system is far too rigid. After all, universities have been offering mature entry to students on this basis for many years. However, there are, and there probably always will be, a group of people who will not be able to achieve advance standing and who do not have any academic credit either. It is likely that, for the foreseeable future, both level 2 and level 3 specialists must be available. It is probable that specialist programmes will be developed, with similar content, but which can be studied at either level 2 or level 3. Gradually, as more and more Project 2000 nurses qualify as diploma nurses, the requirement for level 2 programmes will cease.

One possible way forward is for educational institutions to develop a matrix model within which there will be a whole range of modules so that the individual can make a selection of core and specialist options to study for a specialist qualification. It is likely that such options will be made available from existing bachelor's programmes, and therefore may also enable the individual to qualify for a named degree award. Additionally, careful selection of options which match the key characteristics of the Higher Award should mean that nurses may exit with three qualifications, ie, specialist practitioner registration, a first degree, and the Higher Award. The ENB response paper (ENB 1995b) has already identified a number of common themes between specialist programmes and the Higher Award (Table 3). Potentially the way ahead is very exciting and offers a much more flexible approach to individual learning needs.

There is recognition by the UKCC that not all practitioners will want to be specialist nurses. There is also recognition that not all practitioners will need to be specialist practitioners. Programmes of education must cater for the requirements of all nurses. It must not be assumed that all nurses who want to undergo level 3 programmes also want a specialist qualification. There must be flexible options so that all nurses can take the pathway to fit their individual requirements.

The UKCC believe that following initial qualification, and before entering a level 3 specialist pathway, there should be a reasonable period of clinical nursing practice. This is entirely justifiable since the achievement of specialist practice is dependent on the acquisition of specialist experience as well as specialist knowledge. Because specialist programmes will have a strong emphasis on clinical practice, course assignments are likely to be linked to the individual's clinical practice area and will therefore require a level of understanding which is not possible for the novice practitioner.

A recent NHS executive letter (NHS Executive 1995) states that employers will need to:

'determine the number of practitioners needed to work in a capacity which requires a specialist qualification and commission education, within the funds available, to meet these needs'.



While the UKCC are perhaps embarking on an idealist approach to post registration nursing education it may be ineffective unless met by purchasing intention within trusts. The key issue in the above statement is 'within the funds available'. While payment for specialist programmes may be met by many individuals, the financial viability of many pathways may depend on Trusts contracting for these courses. Whether they decide to invest in them or not will depend on their own training needs analysis. Difficult questions regarding the need for graduate specialists will be addressed. The reality is that cost implications may well prohibit some trusts from employing specialist practitioners.

## CONCLUSIONS

The introduction of the registered specialist qualification has wide ranging implications for all nurses, in particular nurses working in critical care specialties, and educational institutions. The UKCC has proposed a fairly radical shake-up of post-registration education which will take several years to implement. If flexible programmes are developed which really do acknowledge and credit prior experience then the way forward is very exciting. However, if rigid criteria are applied many nurses may not be able to achieve the specialist registration their level of practice deserves.

NHS reforms appear to have shifted the emphasis in health care towards cost effectiveness (and some would argue away from quality). The PREP reforms promote

quality nursing, and the success of specialist practitioners may well reside with the willingness of the NHS to invest in them. □

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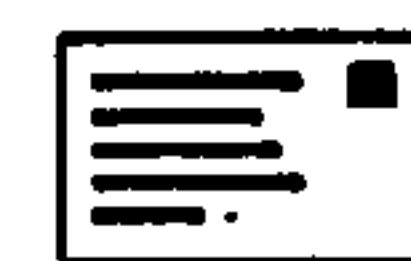
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## What is advanced practice?

Earlier this year, within the Post Registration Education and Practice (PREP) framework, the UKCC proposed a new 'sphere of nursing': *advanced nursing practice*.

This is not an additional layer of practice to be superimposed on specialist nursing practice. It is, rather, a description of an important sphere of professional practice which is concerned with the continuing development of the professions in the interests of patients, clients and health services (UKCC 1994).

The creation of the new role of advanced practitioner is undoubtedly envisaged as vital for the health care professions by the UKCC to enable pioneering clinical practice, and there are many implications for nurses working in critical care areas. At this stage, however, it is not clear how this ideal will be achieved since there is no recognised framework for advanced practice and the role of advanced practitioner has yet to be established within the career structure of nurses working in the UK.

In order for the role of the advanced practitioner to be professionally recognised some sort of framework is required which offers clear guidelines for the role within a defined career structure. If such a career structure was developed, which incorporated an advanced practitioner, it would require the distinction to be made between the advanced practitioner and the many other roles such as clinical nurse specialist, clinical nurse manager, clinical expert, lecturer-practitioner, whose titles currently incorporate advanced practice. Currently, there is no formally recognised advanced practitioner role and this makes it very difficult to identify who the advanced practitioners are. It is possible that whilst there are many different roles, they may in fact all be advanced practice roles. It is also possible that there are some nurses whose title suggests they are an advanced practitioner when in fact they are not.

The issue of remuneration and status must be addressed. Advanced practitioners must be offered a career package which enables them to stay in clinical practice. This is particularly important in the light of the 1988 clinical regrading exercise. Although it was intended to reward nurses for clinical advancement it is arguable that it failed to do so adequately. As a result of implementing this structure the clinical

career ladder of nursing has effectively been cut off at Sister level. There is real danger, as Kersley (1992) warns in relation to clinical nurse specialists, that the lack of recognition and financial reward for clinical expertise runs the risk of losing such staff to education and management, leaving the clinical area 'bereft of leaders and lacking direction'. In the current climate of NHS reforms the clinical career ladder has in many instances been even further reduced to F grade level because the Sister's role has now effectively become one of the first line manager.

The profession must be careful to ensure that advanced practice is not shaped by the medical model, possibly resulting in a collection of extended roles which would best be described as medical tasks, owing little allegiance to nursing. There may also be a hidden impetus in this direction by the Department of Health, concurrent with the reduction in junior doctors' hours. To allow such developments would be in contradiction to the professional drive in nursing embodied in the UKCC's Scope of Professional Practice (UKCC 1992) which although ratifies the 'extension' of the nurse's role, is underpinned with the principle that *clinical practice* should be for the benefit of patients. Advanced clinical nursing is more than a collection of extended roles. It should be the exemplification of nursing excellence itself. As such, advanced practice should be synonymous with advanced **nursing** practice. Should the nursing profession allow the development of advanced nursing practice to be driven from external politico-economic factors there is a real potential for its nursing essence to be lost.

There are many other issues which must be addressed in relation to advanced practice and there is clearly a need to understand the concept in greater depth. The profession should not allow the introduction of the new sphere of advanced practice suggested by the UKCC until the concept has been fully understood. Only then can the role of advanced practitioner be properly developed in a more considered and informed way by the profession.

*Paul Fulbrook, National Treasurer*

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## Changing status

BACCN holds charitable status and is

required by the charity commission to be governed by a constitution. The association is 'managed' by a national committee who elects an executive committee to direct the business and activities of the Association. Our annual turnover continues to grow and in order to safeguard national and regional committee members who act as trustees for the association we have become a Company limited by Guarantee. There will be no changes in the Association for the members, but this change provides insurance for the trustees, protection for our members in that the association exists on a more permanent basis; it will have a safeguard against fraudulent activity and a stronger corporate image. As a company limited by guarantee, BACCN has to comply with the Companies Act (1985, 1989) and file our constitution with Companies House, audit the National Account (which we do every year), and make the accounts available for public inspection. Each regional committee has information on this change, so please contact them if you have any queries regarding this issue. The changes will also be discussed at our AGM in April, so come along and find out!

*Helen Ellis, President*

## 1995 Conference and AGM

We have decided to separate our annual general meeting from the National Conference. The changes to our financial year mean that our AGM can now be held during the first part of the year to present the previous year's accounts and activities as soon as possible. Holding the AGM at the National Conference also means a hectic meeting as there is always too much to do at Conference. A separate AGM also provides an opportunity for Forum activity. Our National Conference will be held from 18-21 September at Strathclyde University in Glasgow. Conference posters and booking forms will be out soon, so make a diary date or ring Sue Clarke on 01724 845000 to request information and booking forms.

Our AGM will be held on Friday 21 April 1995 at the NSPCC Training Centre at Leicester. It will be supported by a full programme from the Education Forum, Research and Nursing Practice Development Forum (launched at the 1994 National Conference) and our latest initiative, The Management Forum. A booking form is enclosed in the journal. Encourage a friend who is not a member to come along, the non-member fee includes a year's subscription to BACCN and application forms can be completed on the day. Requests for information and booking forms should be directed to Lynne Harrison on 01602 721298 (telephone and fax).



# Advanced practice: do we know what it is?

*P Fulbrook*

## Summary

- The UKCC has proposed the development of an advanced practitioner role
- The role is equated with master's and doctorate level of preparation
- The development of the advanced practitioner role is outlined
- The assumption that the nursing profession understands the term advanced practice is challenged
- It is not possible to make explicit the role of the advanced practitioner unless nursing knowledge is used as its foundation
- Two basic questions have yet to be answered: What is advanced practice? What is an advanced practitioner?

**Keywords:** Advanced practice, Advanced practitioner, Clinical nurse specialist, Specialist

## INTRODUCTION

The concept of advanced practice merits particular attention in relation to the development of the nursing profession. The recent publication of the United Kingdom Central Council's (UKCC) post-registration education and practice (PREP) initiative announced a new level of practice that can be registered; that is, that of specialist practitioner and a new sphere of practice that is, advanced practice (UKCC, 1994). The UKCC has been fairly clear about what is meant by a specialist, but has not yet defined an advanced practitioner (UKCC, 1995).

Within this context it is important to address the concept of advanced practice because the UKCC has yet to clarify its attributes; its nature is unclear. Furthermore, the role of the advanced practitioner — that is, the exponent of advanced practice — has not been made explicit in the literature. As Castledine (1991) stated in response to an earlier PREP Project (UKCC, 1990): "The profession is uncertain about what the advanced practitioner really is." In the current climate of professional development in nursing, the concepts of 'advanced practice' and 'advanced practitioner' need clear definition.

The UKCC is proposing that there should be two levels of practitioner: beyond basic or primary practice there will be a further specialist level. To become a specialist nurse will require undertaking a recognised programme of specialist study at first-degree level. Such programmes are not yet established. In addition to the two levels, the UKCC has defined a further "sphere" of nursing practice which it describes as advanced nursing practice: "This is not an additional layer of practice to be superimposed on specialist nursing practice. It is, rather, a description of an important sphere of professional practice which is concerned with the continuing development of the professions in the interest of patients, clients and the health services (UKCC, 1994).

It is suggested that attainment of advanced practice would require a level of academic study equal to with a

master's degree (UKCC, 1994), and that advanced nursing practice is: "concerned with adjusting the boundaries for the development of future practice, pioneering and developing new roles responsive to changing needs and, with advancing clinical practice, research and education to enrich professional practice as a whole" (UKCC, 1994). A similar sphere of practice is proposed for midwives (UKCC, 1994).

The UKCC undoubtedly sees the new role of advanced practitioner as vital for the health-care professions to enable pioneering clinical practice. At this stage, however, it is unclear how this ideal will be achieved, since there is no recognised framework for advanced practice and the role of advanced practitioner has yet to be placed within the recognised career structure of nurses in the UK.

In the light of the UKCC's (1995) proposals, it is important to consider advanced practice from several perspectives. The aim of this paper is to place advanced practice within the context of contemporary nursing. The remainder of this paper will, therefore, outline some aspects of the historical development of advanced practice.

## HISTORICAL DEVELOPMENT

The concept of the advanced practitioner has long been established in the USA, although it is normally associated with the role of clinical nurse specialist (CNS). The US model of advanced practice is based on the key concepts of clinical judgment and leadership (Spross and Baggerley, 1989).

The CNS has been recognised in the USA for many years, having developed from the notion of nurse clinician which was first advanced in the 1940s (Hamric, 1989) and later written up by Reiter (1966). In 1970 the American Journal of Nursing published a collection of papers about the CNS (Lewis, 1970). Thus it was not until then that the role was effectively introduced and recognised in the clinical practice setting (Hamric, 1989), and following explication by Georgopoulos and Christman (1970; 1973).

However, an Australian view is that the synonymous use of terms such as expert, specialist and advanced practitioner in the North American literature has led to confusion, since advanced nursing practice may differ from other forms of nursing practice, such as specialist or expert practice (Sutton

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and Smith, 1995). A similar conclusion is reached in a recent Canadian paper: "The meaning of advanced practice in the current literature is defined by broad generalisations... However, the common thread which links these roles and explains their common goal has not been made explicit" (Patterson & Haddad 1992).

In the UK the concept of advanced practice (in the guise of a clinical nurse consultant) was considered by the RCN in the early 1970s in response to the Briggs report (Barrie-Shevlin 1985). The RCN's "New Horizons in Clinical Nursing" put forward the case for an advanced clinical role and proposed the development of a clinical nurse consultant (RCN, 1975).

However, possibly because it was proposed in the wake of the Salmon report (Ministry of Health and Scottish Home and Health Department, 1966), and the subsequent introduction of a clinical nursing structure which emphasised management, the role failed to gain acceptance. An additional obstruction to its development may have been the assertion that the role of clinical nurse consultant: "should attract salary recognition consistent with the level of responsibility and the high degree of expertise" (RCN, 1975). The role was also seen as a potential threat to senior clinical nurses (Barrie-Shevlin, 1985).

The literature reviewed in this paper reveals very little development of advanced practice in terms of an advanced practitioner role in the UK over the past 20 years or so. However, several advanced roles have been developed, the most notable of which are the consultant nurse (for example, Wright, 1991) and the lecturer-practitioner (for example, Lloyd-Jones, 1993). While these roles are focused on nursing practice and do include a clinical practice role, the former may be led more by the management structure, whereas the latter appears driven by the educational structure. The term advanced practitioner suggests that the role should be driven by clinical practice.

The role of clinical nurse specialist in the UK has frequently been subscribed to (Castledine 1992), and advanced practice should be implicit within this role. Following the 1983 health service reorganisation, many hospitals employed CNSs (Sargeant, 1983) but there was still little evidence in the literature of advanced practice. The role of the CNS appeared to develop on a somewhat individual basis rather than according to a recognised framework such as that described by Hamric and Spross (1989). One relatively early example of the new CNS role in the UK was described by Sargeant (1983), who considered her sub-roles to be clinical nurse advisor, practitioner, counsellor, educator, manager and administrator. However, her role appeared to be biased towards management rather than clinical practice per se, since within her paper she stated: "My responsibilities give me few chances to nurse patients myself", which suggests that her clinical role was somewhat limited. It may be argued that, to be an advanced practitioner, a nurse's role should have a clear emphasis on clinical practice.

Thompson and Webster (1986) appraised the role of CNS in relation to critical care nursing, but were unable clearly to identify its components. They felt that there were many grey areas, that the issues were "dogged by confusion and lack of uniformity", and that the lack of a clearly defined structure for the role had inhibited its development. They support their argument by citing McFarlane (1980), who suggested that the bureaucratic nursing structure of the NHS was not

responsive to such changes and did not easily accommodate innovatory development.

In 1990 in its post-registration education and practice project (PREPP) document, the UKCC stated: "The standard, kind and content for advanced practice will be specified by the Council. Advanced practitioners must have an appropriate Council-approved qualification recorded on the register" (UKCC, 1990).

Castledine, an advocate of advanced practice since the early 1980s, suggests that this was the first time that an official announcement had ever been made in the UK regarding the development of an advanced practitioner. He stated that the "political and professional road to identification of advanced practice has been a continual uphill struggle" (Castledine, 1992). Indeed, this has been underlined by the extremely slow progress of consultation made by the UKCC since the publication of PREPP (UKCC, 1990).

In 1988 the career structure of nursing was radically altered with the introduction of clinical grading (Nursing and Midwifery Staff's Negotiating Council, 1988). Although it was intended to reward nurses for clinical advancement, it is arguable that it has failed to do so adequately, since one result of implementing this structure has been that the clinical career ladder of nursing has effectively been cut off at sister level. Kersley (1992) makes the important point that the lack of recognition and financial reward for clinical expertise runs the risk of losing such staff to education and management, leaving the clinical area "bereft of leaders and lacking direction".

In the current climate of NHS reforms, it is arguable that the clinical career ladder has been further reduced; to F-grade level. Certainly, it is the author's work-based experience that these issues are facing practitioners because the sister's role has now effectively become one of first-line manager.

In order for the role of advanced practitioner to be professionally recognised, it would seem prudent to determine clear guidelines for the role within a defined career structure. The need for a clinical career structure for nursing has been emphasised in the past by the RCN in two publications: 'Towards Standards' (RCN, 1981) and 'Towards a New Professional Structure for Nursing' (RCN, 1983). The latter publication, while proffering a new career structure (RCN, 1983) failed to describe an advanced practitioner role as such. This is somewhat disappointing, as it had been developed from an RCN seminar on advanced clinical roles published only a year earlier (RCN, 1982).

If a career structure was developed that incorporated an advanced practitioner, it would require the distinction to be made between advanced practitioner, clinical specialist and clinical nurse specialist. Relatively recently an RCN working party proposed a nurse specialist, which it described as an expert "in a particular aspect of nursing care" who "demonstrates refined clinical practice, either as a result of significant experience or advanced expertise, or knowledge in a branch or specialty" (RCN, 1988). It goes on to state that it is because "there is no formally recognised position ... within the present structure... it is difficult to recognise who is functioning in this role" (RCN, 1988). A number of other professional titles compound the problem; for example, clinical expert, clinical nurse manager, nurse consultant, senior clinical nurse. It is possible that while there are many different roles, they may all in fact be advanced practitioners.



It is also likely that many professionals possess titles which suggest they are advanced practitioners when in fact they are not.

## THE DEVELOPING ROLE OF ADVANCED PRACTITIONER

In the emergent years of the nursing profession, when trying to develop nursing as a discipline, nurse theorists were more influenced by positivist approaches. The value and esteem in which science was held was naturally assimilated by a nursing profession which was male dominated (Watson, 1981; Trinkle & Beaton, 1983). As such the respect accorded the scientific view is exemplified by many of nursing's major theorists in the quest for a 'science of nursing' and the dominance of empirical knowledge pervades nursing literature (Feldman, 1981).

There is a danger, however, that if the hard scientific paradigm dominates the development of the advanced practitioner role it could be shaped by the medical model, possibly resulting in a collection of extended roles which would best be described as medical tasks, owing little allegiance to nursing. There are many current examples of such roles being developed (for example, McDougall, 1994). Often they are based on the senior house officer role and most frequently they are accompanied by the title of nurse practitioner. The use of this title may be a misnomer since it is contended that all practising nurses are nurse practitioners. The title is also confounded in relation to the use of the term (general) practice nurse.

It must be recognised that there is a strong movement towards a medical model of advanced practice which is being driven by the Department of Health, concurrent with the reduction of junior doctors' hours in relation to their training needs (Department of Health, 1993). Such a move would be in contradiction to the professional drive in nursing embodied in the UKCC's "Scope of Professional Practice" (UKCC, 1992) which, although it ratifies the extension of the nurse's role, is underpinned with the principle that clinical practice should be for the benefit of patients. If the nursing profession were to allow the development of advanced nursing practice to be driven by external politico-economic factors there is a real potential for its nursing essence to be lost.

Advanced practice nursing is more than a collection of extended roles. It should be regarded as the pinnacle of clinical nursing. As such its development should be driven by consideration of nursing knowledge and the art of nursing. The art of nursing is recognised by its wholeness, and therefore it derives its knowledge base from many different sources.

Several ways of knowing in nursing have been described: empirics; ethics; personal knowledge; and aesthetics (Carper, 1978). Aesthetic knowledge describes the 'art' of nursing which relates to the compassionate and caring qualities which nurses bring to health care. It includes clinical judgment, which is based on a number of factors relating to the client rather than scientific knowledge alone, and is concerned with interpreting meaning into action (Vaughan, 1992). It also accounts for the notion of intuition proposed by Benner (1984). Although Rogers (1980) believes that nursing is both an art and a science she states that: "The art of nursing is the imaginative and creative use of this knowledge in the

human service". Aesthetic knowledge is a highly developed component of advanced practice (Fulbrook, 1994).

It is because the 'art' is such an individual quality — a contextually dependent human capacity to care — that it is so difficult to quantify in scientific terms (Dunlop, 1986). Nursing is a: "unique blend of ideals, values, integrity and commitment to the well-being of others, expressed in a nurse's self-presentation and responses to clients, making each nurse a one-of-a-kind artist in nursing practice" (Peplau, 1988). Similarly, an advanced practitioner is a unique individual, whose expertise is shaped by her personal knowledge and experience. It is through her highly developed nursing knowledge and experience and the personal nature of her interaction with clients and colleagues that the advanced practitioner brings a unique contribution to health care not provided by others.

It is a belief in the value of the art of nursing which should be guiding the development of the advanced practitioner role in nursing.

## CONCLUSIONS

Little is understood about the nature of advanced practice. It has been described as "a complex composite of knowledge and experience applied in a unique way according to each situation through the medium of the self... of the advanced practitioner" (Fulbrook, 1994).

It is not practical to clarify the many advanced practice roles of the many titles held by senior nurses, nor yet is it possible to develop guidelines for implementing advanced nursing practice. Prerequisite to any such development must be a clear understanding of the concept of advanced practice. Until this has been achieved it will not be possible to make explicit the advanced practitioner's role.

Advanced practice must be considered from the perspective of nursing rather than external factors which may be driving the introduction of an advanced practitioner role into the professional nursing structure. If the nursing perspective of practitioners, and the art of nursing are not considered there is real danger that the nursing essence of the role will be lost. Until the nursing profession is able to make explicit the concept of advanced practice through the knowledge base of nursing, it will not be possible for the role of the advanced practitioner to be considered and developed in an informed way by the profession.

Two basic questions must be asked (and remain unanswered): What is advanced practice? What is an advanced practitioner?

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# Mission and philosophy of journal

The mission of the journal is to provide a new vision for nursing in critical care in Britain, one that will not only foster individual and professional development, but one that will be at the leading edge of innovation, research and critical debate concerning the nature of critical care nursing in Britain and Europe.

Fundamental to this vision are the central values and beliefs underpinning the journal's inception. This vision:

- Views critical care nursing as reflecting the whole spectrum of skills, knowledge and attitudes used by practitioners in any setting in which adults or children, and their families are experiencing acute and critical illness. Such settings encompass general and specialist hospitals and the community, covering the diverse specialities of surgery, medicine, cardiac, renal, neurosciences, haematology, obstetrics, neonatal nursing and paediatrics.
- Focuses on the nurse's independent and interdependent functions as a collaborative practitioner in the multi-disciplinary team rather than its dependent functions.
- Promotes the nurse in critical care as a reflective, creative and intuitive practitioner who can draw on a range of different knowledge bases, research methodologies and approaches to enhance patient and family care.
- Recognises that nursing can make a difference to the quality of care received by patient and families in critical care.
- Values the individual, and acknowledges that each individual nurse, patient, family and multi-disciplinary

team member can contribute to our understanding of critical care nursing.

- Values collaboration and networking and recognises that we can achieve more together than we can as individuals
- Acknowledges the importance of sharing our ideas and knowledge and actively strives to develop our critical thinking and personal knowing.

This journal therefore reflects these values by aiming to promote the art and science of critical care nursing; and subsequently, to develop and disseminate all ways of knowing – empirical, aesthetic, moral and personal – through focusing on practice, research, management and education.

It hopes to achieve this purpose in two main ways. The first is through publishing research, literature reviews, detailed discussion of issues and reflections, which will generate informed debate, encourage proactive recognition of issues, and stimulate research. The second is by providing a network and newlink for BACCN members.

Part of the role of the editorial board and our panel of reviewers will be to provide rigorous review of all articles submitted for publication. We feel strongly that by using two reviewers combined with anonymous review we can guarantee the quality of the writing and research for our readers. Related to this, however, is our responsibility to provide feedback to whomever submits articles to us, and this we believe should be achieved within 6-7 weeks of receiving contributions. ■



## Chapter 25

# Physiological Measurement

Paul Fulbrook

### Introduction

#### Measurement

To measure is to determine the size or range of something. The result is a measurement which is accorded numerical significance to characterize the quantity of the object or thing measured. The tools which are used for measuring are described as instruments and are standardized to enable accurate comparison of measured things.

#### Physiological data

The measurement of physiological data may be performed for many reasons in nursing research.

#### Description

Data may be collected for statistical analysis in order to provide statistics about a group of patients being studied. Mean body weight or blood pressure might be appropriate measurements to make. This type of information helps to give the reader of the research a clearer picture of its relevance to their own practice. In other words it assists with the reader's judgement of the generalizability of the findings.

#### Relationship

Physiological statistics might be further analysed in relation to other data collected and the group of patients studied. For example, a group of 40-year-old men might be studied over a period of several years in relation to heart disease. By analysing body weight and blood pressure in relation to those who do eventually develop heart disease it might be possible to identify an *at-risk* group on the basis of either their weight or blood pressure, or a combination of the two.

#### Response

Often physiological features are measured as a means of indicating the response to a



controlled action. For example, heart rate and blood pressure changes might be measured in response to a standardized period of rest and used to indicate levels of relaxation. In a *controlled* situation the rest period would be described as the independent variable and the heart rate and blood pressure changes as the dependent variables (because they depend on the independent variable to produce a change).

### Comparison

Physiological measurements may also be used to enable comparison of 'like with like' which would be necessary if, for example, control groups were required for a clinical trial. Using the same examples of body weight and blood pressure – this time as a measure of success – a researcher might compare an innovative nursing strategy with a conventional nursing practice. An example is Cerny's (1989) research with cystic fibrosis patients. He compared conventional bronchial therapy of postural drainage with chest percussion and vibration, with an exercise programme as a stimulus for sputum expectoration. He evaluated the effectiveness of the two regimes by measuring pulmonary function and was able to demonstrate that both therapies were equally beneficial.

A similar, hypothetical example would be a nurse on a medical ward caring for patients following myocardial infarction who felt that her ward's rehabilitation programme lacked adequate dietary information. Although it may only be a 'hunch', a dietary information booklet might be introduced to the rehabilitation programme of an experimental group of ten patients with high blood pressure and obesity. Its effect might be measured and compared to a control group of ten patients with statistically similar blood pressure and weight undergoing the conventional rehabilitation programme only. The degree of success of introducing the dietary information booklet would be judged according to the ability of statistics to suggest that the addition of the booklet had a greater effect.

### Controlled situations

It is important to note that the nursing setting rarely produces a controlled situation, since there may be many other phenomena which may be occurring at the same time. For example, during a period of rest in a ward environment such as that described in the earlier hypothetical study, there may or may not be a lot of noise, the patient in the next bed might be using a commode, or the subject may have slept very badly the night before. All of these factors might affect the person's psychological status, possibly affecting their cardiac response. Unless the researcher collects an inordinate amount of *possibly* relevant environmental data it is impossible to state that heart rate and blood pressure changes were in response to the rest period alone. Thus the scientific approach is to remove the subject from a relatively uncontrolled setting to a situation, such as a laboratory, where the environment can be better controlled. This approach is also limited, since the fact that something



works under laboratory conditions does not prove that it works in other circumstances. Thus, laboratory findings may or may not be generalized.

### Assumptions

Similar to the point made regarding environmental factors, there is a danger when making physiological measurements that the researcher fails to measure all relevant physiological parameters. It is possible that the findings of the rehabilitation study were that the booklet was effective in producing a more significant weight loss. However, patients having lost weight might also be suffering from lethargy and general weakness as a result of eating much less. But since there was no mechanism in the research design to account for these phenomena they were not measured and might therefore go unnoticed.

There are clearly many research situations which require the measurement of physiological parameters. The importance of considering the environmental factors has been outlined, but equal importance should be accorded to both the method of measurement and the instruments of measurement. The researcher needs to know that the measurement procedure is appropriate and that the instruments used are accurate and measure what they purport to measure.

### Measurement procedures

This section details with the process of making physiological measurements.

#### In vitro and in vivo measurements

Physiological measurements may be made either *in vitro* or *in vivo*. *In vitro* measurements are made away from the subject. An example of an *in vitro* measurement is given by Fehring (1990) whose subjects measured luteinizing hormone from a sample of urine to predict ovulation time. The urine sample was tested after it was obtained. *In vitro* measurements are frequently made in a laboratory.

An *in vivo* measurement is made directly from the patient, and a value obtained at the time of measurement. Engstrom & Chen's (1984) study was based on *in vivo* measurements. They recorded several extrauterine measurements of pregnant women of at least 36 weeks gestation, from which they were subsequently able to predict infant birthweight with reasonable accuracy.

The issues raised in this chapter are generally relevant to both *in vitro* and *in vivo* measurements. However, most nurses are likely to be more familiar with *in vivo* measurements, and may therefore be drawn to these types of measurements in their research. Some common examples of *in vitro* and *in vivo* measurements are given in Fig. 25.1.

There are several research aspects in relation to *in vitro* measurements of which the nurse researcher should be aware. *In vitro* measurements usually involve the taking of a sample from a patient for analysis under laboratory conditions, although



Physiological parameter	Measuring instrument	Type of measurement
Blood pressure	Sphygmomanometer/stethoscope	In vivo
	Arterial catheter/transducer	In vivo
	Automated cuff machine	In vivo
Blood sugar	Glucose stick/glucometer	In vitro
Urine volume	Jug/weighing scales	In vitro
	Ultrasound	In vivo
Oxygen saturation	Pulse oximeter	In vivo
	Arterial blood gas machine	In vitro
	Indwelling arterial oximeter	In vivo
Tidal volume	Wright's spirometer	In vivo
Sputum culture	Culture plate/microscope	In vitro
Calf girth	Tape measure	In vivo
Nerve conduction	Peripheral nerve stimulator	In vivo
Plasma potassium	Laboratory machine	In vitro

Fig. 25.1 Some common examples of physiological measurements.

many such measurements may be made within the clinical area. Frequently the researcher will be taking samples of body fluids such as blood or urine, therefore all necessary precautions should be taken to reduce the risk of infection and cross-infection to both the researcher and the patient, and possible contamination of the sample by the researcher.

The integrity of the sample must also be safeguarded. Samples should be taken according to a standardized protocol, correctly labelled and stored, properly transferred and correctly tested (see Ware *et al.*, 1993 for an example of such a procedure). Each step of the journey from patient to laboratory has the potential to render the sample useless for research, due either to deterioration or contamination.

Once the sample has arrived at the laboratory the researcher must frequently place trust in the laboratory technicians who handle and test the sample. This trust may also have to be extended to the reliability of the laboratory equipment since researchers may be denied access to the laboratory. To overcome potential problems in the laboratory it is advisable to seek advice and support from the laboratory manager who can ensure that samples are carefully managed and that measuring instruments are accurate and properly calibrated. He should also be able to provide information regarding the specifications, reliability and validity of the measuring instruments which should be quoted in the research write-up.

Many potential problems can be avoided by maintaining control of samples taken for in vitro measurement. As soon as the sample passes from the researcher's hand it is out of her control and the potential for error becomes greater. To ensure the integrity of the sample the researcher should take responsibility for as much of the



process as possible. This should include transporting samples to the laboratory and, where possible, testing them herself.

It should not always be assumed that laboratory equipment is the most accurate and it is well worth the researcher investigating alternative measuring instruments which can be used at the bedside. For example, there are many *dipstick* products which could be used as an alternative to sending samples to the laboratory. Many bedside instruments have been researched and validated and a frequent bonus, such as that found by Newman (1988) researching blood sugar levels, is that such instruments are more cost-effective than laboratory services.

The basic steps of making physiological measurements are summarized in Fig. 25.2.

IDENTIFY:	Variables <ul style="list-style-type: none"> <li>• dependent</li> <li>• independent</li> </ul>
DESCRIBE:	Operational definition <ul style="list-style-type: none"> <li>• measurement procedure</li> <li>• protocol to be followed</li> </ul>
DETERMINE:	Timing of measurements Frequency of measurements
CONTROL:	Controlling the environment <ul style="list-style-type: none"> <li>• can the environment be controlled?</li> <li>• have environmental factors been considered?</li> </ul>

Fig. 25.2 Making physiological measurements.

## Variables

When considering the design of a research project it is vital for the researcher to consider all the independent variables which might affect the physiological parameter being measured. This is particularly difficult when conducting research within the clinical setting of nursing practice because there are so many factors (independent variables) which have the potential to influence the dependent variable. Examples of independent variables frequently recorded by researchers are subjects' age and gender. These are attributes of the research subjects which cannot be changed. However, when a researcher introduces an independent variable (such as the information booklet in the hypothetical cardiac rehabilitation study), its content or the frequency of its use might be varied.

A good research example which illustrates the value of recording multiple variables is Ware *et al.*'s (1993) study of illicit drug-taking mothers. In their study drug-taking was assessed by measuring drug levels in the urine of neonates. Age, race, residential area, type of delivery, prior number of pregnancies, gestational age of the neonate and several other factors were also recorded. Analysis of the data enabled the researchers to develop a profile of drug-taking mothers which subsequently helped to identify at-risk neonates.



### Operational definition

When the researcher has decided which physiological measurements to record, the next stage is to give each one an operational definition. An *operational* definition is one which, for the purpose of the research study, describes what is meant by the variable term and how it is to be measured. An example of an operational definition might be (Fulbrook, 1993):

**'Axillary temperature – that temperature which is recorded 4-hourly, intermittently and is obtained by placing the bulb of a standard "normal range" mercury thermometer into the centre of the axilla, and left in place for a period of not less than 12 minutes with the arm firmly positioned to the side.'**

Operational definitions are then used as a framework to guide the research process and to ensure a standardized approach. As such they are also very important for subsequent researchers wishing to replicate the study, and to enable readers of the research to apply the findings to their nursing practice. If, for example, the duration of thermometer insertion had been excluded from the above operational definition, neither would be possible.

### Timing and frequency of measurement

When taking both *in vitro* and *in vivo* physiological measurements it is vital to ensure that they are taken at the appropriate time and frequency.

#### Timing of measurement

It is particularly important to consider the measurement of the dependent variable in relation to the independent variable. For example, in the hypothetical study above which measured physiological parameters following a period of rest, there may well be an effect measurable in the cardiac response, but the duration of the effect is unknown. It might be that following a one hour period of rest, heart rate and blood pressure do indeed fall. However the duration of this effect might only be 20 minutes, after which the heart returns to its pre-intervention status. All measurements recorded after this time will therefore show no change. A faulty research design which specifies physiological measurements 30 minutes following the rest period will fail to identify any effect. In this respect the importance of a pilot study cannot be over-emphasized. A pilot study can save time and energy by helping to identify the appropriate timing of measurements.

A whole range of factors could affect the validity of physiological measurements if inadequate consideration is given to the timing of their recording. Additionally it may also be necessary to take repeated measurements over a period of time in order to demonstrate consistency of findings.



### Frequency of measurement

The frequency with which physiological measurements are taken may itself affect the range of responses obtained, particularly if the research subject finds the measurement stressful. The recording of blood pressure is a familiar example, since blood pressure might be temporarily elevated during a stressful event. Gruber's (1974) study is a similar example. Because there was a documented potential for parasympathetic slowing of heart rate in response to rectal thermometer insertion, she undertook a study of rectal temperature measurement. Contrary to expectations she found, in fact, that her subjects' heart rates tended to increase, probably in response to the embarrassment and anxiety caused by the procedure rather than the procedure itself.

Frequency of physiological measurements should also be planned so that they do not coincide with other events which could affect them. It would be unwise to measure respiratory rate, peak flow and tidal volume on an emphysemic patient only five minutes after he has walked back from the bathroom, unless the walk back from the bathroom was the independent variable under investigation.

Sometimes physiological measurements are taken to compare the accuracy of a variety of measuring instruments, or possibly to compare a physiological parameter measured at different sites. The researcher, for example, might wish to compare the accuracy of blood pressure measurements using a conventional sphygmomanometer with an indwelling arterial line and a non-invasive automated instrument (see Norman *et al.*, 1991 for a comparable example). Similarly, she might wish to compare the relationship between the rectum, axilla and mouth as sites for measuring temperature using a single instrument such as a mercury thermometer (see Nichols *et al.*, 1966, for example).

Ideally such measurements should be performed simultaneously to ensure that the conditions under which all measurements were taken were identical. It is also ideal to repeat measurements over a period of time. This enables the researcher to demonstrate reliability of findings and adds to the validity of the research.

Another reason to take repeated measurements is to demonstrate that the findings are consistent under a variety of conditions such as sleep and wake or day and night patterns. In particular, many physiological parameters are known to be affected by circadian variations. A single cluster of measurements taken in isolation has little validity compared to repeated measurements taken over a period of time.

### Controlling the environment

As described in the introduction, it is very difficult to control the environment when nursing research is carried out within a non-laboratory setting, such as a clinical ward area. The scientific approach is to reduce the potential for unpredictable factors which may affect the research findings. Therefore the easily controlled environment of the laboratory is deemed the most suitable. However, within the nursing setting it is often more appropriate to try to consider all the factors



which may impinge on the phenomenon which is being investigated. When designing a research study the nurse researcher must therefore make a decision in this regard, and the number of variables which require measurement or recording should be determined in advance.

Since nursing is a profession which concerns itself with caring for patients it is very difficult to remove patients from the health care setting and study them in isolation. Most nursing research is likely (and indeed desirable) to be carried out in the context of the situation in which it is likely to occur. As such the nurse researcher, rather than attempting to control the environment, should attempt to take into account the environmental factors which might affect the measurement of physiological parameters.

There are many environmental factors which could affect the physiological variable being measured. For example, ambient temperature will affect skin temperature, as might recent exertion. Also, intrinsic psychological stressors such as anxiety or extrinsic psychological stressors such as those produced by excessive noise and other noxious stimuli such as strong smells might induce a degree of stress which affects the cardiac parameter being measured. Simple investigations such as pupil diameter may vary in response to changes in light intensity. Thus it is important for the nurse researcher, who is most likely to be found investigating phenomena within the health care setting, to consider environmental influences on the variable being measured. Because it is rarely possible to standardize the environment of nursing practice, variations in environmental factors should be noted at the time and subsequently taken into account.

The potential for environmental influence on a dependent variable is given in the following hypothetical example. Cardiac output in shocked patients has been shown by some researchers to correlate with great toe temperature (for example Joly & Weil, 1969). An intensive care nurse decides to do a more up-to-date study and records the great toe temperature of a series of clinically shocked patients. She is careful to ensure that her research design is sound and does in fact make very accurate recordings of both cardiac output and great toe temperature. Subsequent statistical analysis indicates a relationship between the two variables whereby great toe temperature falls when cardiac output falls. The nurse is quite pleased with her findings and is considering trying to get her research published. A colleague asks whether she recorded room temperature and also points out that some patients' feet were covered by blankets whereas others were not. The nurse is suddenly aware that there were other factors which might have influenced great toe temperature. Unfortunately she omitted to record them and realizes that, because she cannot categorically state that the temperature changes were solely as a result of cardiac output changes, the validity of her findings is severely limited.

There is clearly a potential for environmental factors to influence both the accuracy and the meaning of physiological measurements. The nurse researcher should attempt either to negate their influence or to ensure that their presence is recorded and considered with respect to the data analysis.



## Measuring instruments

This section describes issues related to the use of measuring instruments, and is summarized in Fig. 25.3. The strength of measuring instruments lies in their accuracy and objectivity, that is their ability to quantify a phenomenon. Arguably machines reduce the potential for human error. Therefore when two or more researchers use the same instrument of measurement, they are likely to obtain highly similar results.

CHOOSE:	Measuring instrument(s)
EVALUATE:	Reliability <ul style="list-style-type: none"> <li>• does the instrument consistently give true readings?</li> <li>• are the units of measurement sensitive enough?</li> <li>• do the readings remain consistent over time and under different conditions?</li> </ul>
EVALUATE:	Validity <ul style="list-style-type: none"> <li>• does the instrument measure what it is supposed to measure?</li> <li>• does the instrument measure what you want it to measure?</li> </ul>
CHECK:	Previous researchers' use of the instrument Manufacturer's specifications
TEST:	Standardize Calibrate
COST:	Cost <ul style="list-style-type: none"> <li>• equipment hire/purchase</li> <li>• laboratory time</li> </ul>

Fig. 25.3 Measuring instruments.

## Reliability and validity

There are two main issues to consider with regard to the use of instruments for the measurement of physiological parameters: reliability and validity. Reliability is concerned with the instrument's accuracy of measurement, whereas validity is concerned with its ability to measure what it is supposed to measure.

### Reliability in physiological measurement

Reliability is a measure of the instrument's sensitivity, in other words its precision of measurement. Precision is important in terms of the accuracy and consistency of measurement. A measuring instrument must be sensitive enough to measure a physiological parameter in question to a satisfactory degree of precision. If, for example, babies' weight gains in response to either breast or bottle feeding were to be measured with a set of scales whose smallest increment of measurement was a kilogram they would quite clearly be of no use to the researcher. Similarly, if a set of scales were used for the same study, but were found to have a variance of plus or



minus 5% when a standard weight is placed on them, then they too are *unreliable* and of little use.

The reliability of an instrument is determined by many factors and the researcher would be unwise to accept a manufacturer's specifications regarding the accuracy of an instrument, since specifications are usually quoted on the basis of standardized laboratory conditions. Some instruments become inaccurate with prolonged use or wear and tear, whereas others may be more prone to errors caused by the local environment. Electronic instruments in particular are prone to errors caused by electrical interference.

Prior to commencing a research study it is advisable to test the measuring instrument to ensure that it is accurate when in use. A pilot study will usually highlight any errors or inconsistencies. Some instruments are supplied with their own testing instruments and, whenever possible, these should be used. Occasionally it is not possible to test equipment before use, for example sterile equipment. In such circumstances the reliability must be accepted from the manufacturer's specifications.

#### Validity in physiological measurement

Just because an instrument is reliable does not mean that it is valid. A researcher might obtain a highly accurate measure of body length using a tape measure but it would not be *valid* if the researcher wishes to know the weight of the person.

The researcher needs to address the issue of how appropriate the measuring instrument is for measuring the physiological parameter in question. Some instruments do not actually measure the parameter for which they give a value. For example, tympanic thermometers *predict* core body temperature on the basis of infra-red light emitted from the tympanic membrane. It may not therefore be as reliable in measuring as an electronic temperature sensor placed in the pulmonary artery measuring *actual* core body temperature.

It is frequently helpful to refer to previous research studies which have either used the same instrument or evaluated its reliability and validity. A lot of time and energy can be wasted trying to test instruments which have already been scrutinized by previous researchers.

#### Cost

Another issue to consider with respect to measuring instruments is that of cost. Electronic machines in particular are very expensive, both to purchase and maintain. It is always worth trying to enlist the instrument manufacturer's support for the research study. Because it is in their interests to promote their products they are frequently amenable to lending or even donating equipment for research purposes.

In summary, the nurse researcher must carefully consider the appropriateness of any instrument used to measure physiological parameters for a research study. Whilst the issue of cost must be considered, it should not be at the expense of instrument reliability and validity. Finally, it should not be assumed that a machine



is any more capable of measuring a physiological parameter than is a human. The more complicated a measuring instrument is then the more potential there is for both researcher handling error and internal malfunction.

For an excellent overview on reliability and validity of measuring instruments see Gassert (1990).

## Data collection

### Sampling

Sampling procedures are described in Chapter 19. The important factor regarding a sample is that it should be representative of the population being studied. In the context of physiological measurements, sampling merits some consideration.

### Data collectors

If, for example, the nurse researcher wishes to know the mean weight and blood pressure of patients admitted to a medical ward she has a choice: either she can measure the above parameters of *all* the patients admitted over a certain period of time or she can select a sample. What decision she comes to in this regard may depend on what is most convenient for her to do, since time is often a major factor. Should she decide to take measurements from all patients then her presence, or that of other data collectors, is required throughout the 24-hour period for the duration of the study, which is not usually a practical option. Whilst ensuring that all patients are included, this does introduce the potential for variation in the measurements recorded due to slightly different techniques. The advantage of the nurse researcher taking all the measurements herself is that she is sure, and can therefore state, that a uniform technique was used on every occasion.

### Standard technique

If colleagues are enlisted to gather data it is vital to ensure that they are all briefed in the measurement technique required and are fully conversant with the operation of instruments used to obtain measurements. Such a procedure is described by Chan (1993), who compared ultrasound estimation of bladder urine volume with its actual measurement following catheterization. In order to ensure that the method was correct, nurses had first to be trained in the use of ultrasound techniques.

### Pilot study

A pilot study is necessary prior to commencing the main study to test the ability of the research assistants to obtain accurate data.

It is all too easy to assume that nurses, by virtue of their everyday role, are more than capable of taking physiological measurements. Even a simple procedure like



taking a patient's blood pressure is fraught with potential problems which may lead to inaccuracies and inconsistent techniques between data collectors. For example, was the patient sitting up or lying down, how long had they been in this position, where was the sphygmomanometer placed in relation to the patient, where was the cuff placed on the upper arm, was the cuff the correct size, was the cuff correctly applied, how was the degree of cuff inflation determined, was the rubber tubing in good condition, was the fourth or the fifth Korotkov sound used to determine diastolic pressure and was the patient relaxed? The list may be very long, but each step of the procedure should be considered to ensure standardization.

### **Ethical issues**

In any research study there are many ethical issues which require consideration, which are addressed in detail elsewhere in this book. However there are some specific ethical issues which should be considered in relation to the measurement of physiological variables.

### **Foreseeable harm**

No foreseeable harm should come to the subject as a result of physiological measurement. The researcher must therefore make a judgement in this respect. Virtually every procedure imaginable carries with it a degree of risk, however small. This degree of risk must be balanced with the need to carry out the research, but always with the balance tilted in favour of the research subject. It should also be remembered that it is not just physical harm that might be caused but psychological. This might be as simple as embarrassment or loss of dignity.

### **Abnormal findings**

The researcher must also consider in advance what she will do if her findings are such that there is a threat to the patient's health. For example, what course of action should she take if she finds that one of her subjects has an abnormally elevated blood pressure? Again, the principle is that the patient should not come to any harm as a result of the research study. Quite clearly, in such instances, the researcher's priorities must be with the research subjects. All decisions must be made in their best interests, even if it means modifying or abandoning the research study.

### **Summary**

Physiological measurements may be taken by nurse researchers for a variety of research purposes, and provided that several basic rules are followed, highly reliable and valid data will be obtained for analysis.

In the first instance the researcher should determine what measurements are



necessary for the study. This should be considered from the point of view of both independent and dependent variables and in the light of the potential for environmental factors to affect their reliability and validity. The measurement technique should be carefully thought through and standardized. This is particularly important if more than one researcher is collecting data. Any instruments used to measure physiological parameters should be carefully considered in terms of reliability and validity and ideally should be tested for accuracy prior to commencement of the main study. As with all research, ethical issues must be carefully thought through in advance and permission obtained as appropriate.

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# The care of critically ill children in adult ICUs: the way forward

Paul Fulbrook

The provision of paediatric intensive care (PIC) services and where critically ill children should be admitted is a highly emotive issue, particularly in view of the tragic circumstances of Nicholas Geldard last winter. His death 'prompted public concern about the availability and organisation of intensive care services for critically ill children' (NHS Executive, 1996). Strong reactions from the public and the media resulted in government action. The Chief Nursing Officer's Task Force on Paediatric Intensive Care was subsequently set up in July (and is currently preparing a series of reports). The Department of Health injected an extra two million pounds into the health service to improve PIC provision this winter. This extra funding has been equally divided across the eight regions resulting in immediate provision of an extra 30 paediatric ICU and high dependency unit beds with a further 25 planned over the next few years.

Despite the extra money (which is not recurring) the reality is that many critically ill children will, through necessity, continue to be admitted to adult ICUs in the UK. Surveys conducted in 1993 by both the British Paediatric Association (BPA, 1993) and the British Association of Critical Care Nurses (Fulbrook *et al*, 1996) provide evidence that substantial numbers of children are cared for in adult ICUs. This may amount to approximately 3300 paediatric admissions per annum (Fulbrook *et al*, 1996).

There is a very powerful lobby within the PIC specialty to regionalise the PIC service and direct children away from adult ICUs. Whilst this is logical, it is an ideal which cannot be immediately realised. There are many inherent problems in such a seemingly simple proposition. For example, some regions have very little by way of dedicated paediatric ICUs whereas others are well provided for. The geographical spread of paediatric ICUs is not necessarily ideal. Most are smaller than the optimum size (eight beds) recommended by the BPA (1993), and only five are as large as that suggested by Shann (NHS Centre for Reviews and Dissemination, 1994) i.e. 10-16 beds. The Paediatric Intensive Care Society (1996) recommend that paediatric ICUs should have at least six beds and admit at least 250 children annually. Furthermore, the resource implications of increasing PIC service provision in terms of staffing and training costs are extensive.

Until the 'ideal' PIC service is achieved there needs to be greater emphasis on a collaborative approach between adult and paediatric ICUs, where the focus is on the needs of the critically ill child. Many adult ICUs with significant experience and expertise are providing a valuable contribution to the national PIC service.

The suggestion implicit in the PIC lobby is that children are better off cared for in dedicated paediatric ICUs. However, 'there has not yet been a great deal of research on this issue' (NHS Executive, 1996). Currently the only UK

data available to provide a direct comparison of outcomes of paediatric intensive care in adult and paediatric ICUs is the BPA Report (1993) and Barry and Hocking's local study (1995). Both indicate that mortality is similar.

Whilst the total number of children cared for in adult ICUs nationally is substantial, individually only a few units admit significant numbers, and only rarely do paediatric admissions represent more than 10% of the total patient turnover (Fulbrook *et al*, 1996); it is perhaps on these units that attention should be focused. Few RSCNs work in adult ICUs, although there is an increasing trend to employ them (Fulbrook *et al*, 1996).

Regarding the current number and geographical availability of specialist PIC beds, it is necessary to consider the contribution of adult ICUs to the provision of PIC services. Even when the planned total of 55 extra PIC beds are phased in there may still be insufficient resources within the PIC service alone to match the national demand. Unless there are further significant increases in PIC beds, it is likely that there will always be a need to provide some paediatric intensive care within predominantly adult ICU settings. While this situation exists, the key task is to implement measures to ensure the quality of care provided in adult ICU is of a nationally acceptable standard and is comparable to that which is available in designated paediatric ICUs. Therefore, any standards for PIC should be applicable regardless of the setting.

Although, in the long term, it is possible that virtually all critically ill children will be admitted to specialist paediatric ICUs, this is very unlikely within the short or medium term. In the interim, measures need to be introduced to promote best practice and ensure the maintenance of high quality nursing care for children within the adult ICU setting. Several areas merit consideration in relation to the quality of PIC provision within the adult ICU.

## STAFFING AND QUALIFICATIONS

A reasonable standard requirement within an adult ICU admitting children is that an RSCN is on duty (and preferably involved in the direct care of the child) whenever a child is admitted. It is also preferable (though probably unrealistic) that this nurse holds the ENB 415 qualification and if not, then at least the adult equivalent qualification (i.e. ENB 100).

Staff planning for adult ICU must acknowledge that future cohorts of children's nurses who have undergone Project 2000 training will not be qualified to care for adult patients. This is not a financially viable situation for an adult ICU. Managers will, therefore, have to invest in secondary



training in paediatrics for adult intensive care nurses. The adult ICU work force needs to be flexible enough in terms of both education and experience to meet the needs of any patient, regardless of age. This will require both funding and commitment by managers to support education for further qualification and experience.

It should also be acknowledged that some non-RSCN intensive care nurses working in adult ICU have gained considerable experience in the care of critically ill children. These nurses are ideal candidates for 'fast-tracking' onto the ENB 415 course. Enabling such nurses to access this course without first having gained an RSCN qualification merits serious consideration. Other educational approaches in the interim may help ease the problem of 'unqualified' nurses, for example the short ENB 920 course (Principles of Paediatric Intensive Care Nursing) which is available in some centres.

Alongside gaining additional qualifications, motivational factors need to be considered. If nurses are required to be dually qualified this should be recognised in both their status and remuneration, although potentially difficult within the current grading structure.

Adult ICUs should clearly identify those staff who have adequate experience and qualifications in caring for critically ill children. Whenever possible it is these staff who should be the designated carers when a child is admitted. In order to ensure that children are always cared for by appropriate nursing staff, flexible approaches to staffing should be considered. Introducing flexi-time is one option, another would be to consider annual contracts so that nurses work in response to the seasonal fluctuations in paediatric admissions.

There may be some occasions when, for example, due to holidays or ill health a child is admitted to adult ICU and no RSCN is available. On such occasions the provision of an RSCN from one of the paediatric wards (or perhaps the paediatric nurse bank) to work alongside an adult ICU nurse should be considered. This would be very costly, but the need should be infrequent. At the very least there should be a designated paediatric nurse within the hospital, available 24 hours a day, for advice.

If national standards/guidelines are set in relation to nurse : patient ratios or admissions : nurse ratios then these standards should equally apply to the care of children in adult ICUs.

The suggestion that the organisation of the PIC service should include adult ICUs is a logical approach to the current situation (Taylor, 1995). Each adult ICU which admits children could be audited according to nationally agreed standards, on an annual basis, to establish which level of support - 1, 2 or 3 (BPA, 1993) they are able to provide. Part of this audit should establish that adequate numbers of appropriately qualified nursing staff are employed within the adult ICU.

Where available at a recognised standard, PIC beds in an adult ICU should be included in the National Bed Bureau (established in December 1996) and be formally recognised for their part in delivering an effective, responsive, yet flexible paediatric intensive care service.

## CONTINUING EDUCATION

Part of any strategy for the delivery of paediatric intensive within adult ICUs will include a strong commitment to continuing education. This could be provided by several

approaches, in consultation and with the support of the regional paediatric ICU. In addition to gaining experience in paediatric ICUs, other educational activities can be promoted, such as in-house programmes, attendance on Paediatric Advanced Life Support courses, professional updating (e.g. paediatric journal clubs), paediatric conference attendance, membership of a paediatric professional body, multidisciplinary case conferences.

It should also be recognised that intensive care nursing of children can be stressful; perhaps more so for adult ICU nurses who have relatively less exposure to children and their families. Part of the continuing education strategy should be the provision of staff support services such as counsellors, staff self-help groups and clinical psychologists.

## CONSULTATION

Adult ICUs admitting children should establish a formal link with their nearest paediatric ICU, who as a specialist centre should take responsibility for providing quality educational and practice experiences. This may take the form of periods of secondment of adult ICU nurses to the paediatric ICU or educational events. Ideally, paediatric ICU nurses should link with adult ICU nurses in a consultant capacity, advising on how best to develop paediatric nursing care within the adult ICU setting. There needs to be open channels of communication between adult ICUs and paediatric ICUs, fostering a teamwork approach to the care of the child. This approach should be seen as mutually beneficial with the aim of providing the best possible care for the child regardless of the setting.

Additionally, adult ICU nurses can establish formal links with the paediatric department within their own hospital, using paediatric nursing colleagues for their expertise in a consultant capacity. This could be set up as a formal link role between the paediatric wards and the adult ICU (e.g. an ICU liaison nurse). Part of this formal link could involve rotation of nursing staff between the adult ICU and the paediatric wards whereby both parties may gain reciprocal insight, understanding and experience of the child's needs. Again the aim should be to meet the needs of the child, in the best possible way, regardless of the setting.

At the earliest possible opportunity following admission of a child to adult ICU, nursing staff (RN and RSCN) should liaise with the appropriate paediatric nurses. Additionally, continued advice should be sought throughout the whole period of the child's admission. Early links should also be established with the receiving paediatric ward in preparation for the transfer of the child from ICU to the ward. Ideally a primary/named nurse from the ward will be allocated to the child early after admission to ICU, thus promoting continuity of care for child and parents throughout the entire hospital stay. This will help reduce the dependence some children and parents feel when leaving ICU.

Regular multidisciplinary case conferences convened during the child's stay on ICU can ensure that the needs of the child are being met in full, focusing on the child's perspective.

## ENVIRONMENT

Creation and maintenance of a paediatric environment is essential. Unless adult ICUs are able to provide an



environment, such as a private cubicle, where the child can be protected from the potentially stressful and frightening adult environment then their capacity to provide a paediatric service should be questioned. Cubicles/bed areas and equipment should be child-friendly with the emphasis on maintaining as 'normal' an environment as possible. The need for nurses to wear formal uniform should be challenged.

Open visiting for parents and siblings should be encouraged and the adult ICU should be able to offer facilities for parents to remain with their child day and night. At all times the parents' parenting role needs to be maintained.

Paediatric equipment must be the designated responsibility of the paediatric team and the adult ICU should be supported by a full range of paediatric services (e.g. play therapist, paediatric physiotherapist).

## FAMILY

The provision of family facilities as identified above is important, but the unique needs of the child and his family need also to be addressed. A family-centred philosophy should underpin nursing care plans which are designed to encompass the full range of children's holistic needs. Whilst physiological needs are often paramount when a child is critically ill, particular emphasis needs also be accorded to the child's developmental, psychological, sociocultural and spiritual needs. Nursing care plans designed for adults may be inadequate to meet these needs. If primary nursing is not practised in the adult ICU, its adoption should be considered for children who are admitted. Continuity of care and the development of a therapeutic relationship between the caring team and the child and his family is essential.

## TRANSFERS

Any adult ICU that admits children must have the capability to provide an efficient and effective transfer system. Ideally the responsibility for transfer of a critically ill child should be with the receiving unit as this will ensure the correct level of expertise is available for the child, and that it is maintained throughout the transfer. Adult ICUs taking responsibility for the transfer should conform to the recognised national standards (e.g. PICS 1996). An appropriately qualified nurse (i.e. in both paediatrics and intensive care) should always accompany the child on transfer.

## DATA COLLECTION

Adult ICUs that admit children must assume responsibility for both internal quality audit and data collection. Internal

quality audit will include assessing the quality of nursing care provided for children. Nationally agreed data collection tools should include measures of admission status, case-mix variation and discharge outcome. Such information will also help to provide a national picture with regard to optimum size and location of PIC services (whether within adult ICU or paediatric ICU), and will provide outcome data for children who survive intensive care enabling comparison between different types of unit. This information should be made available to purchasers to inform the contracting process.

## SUMMARY

It is unlikely that in the short or medium term the PIC service can be restructured to such an extent that no children would need to be admitted to an adult ICU. Until this is the case the contribution of adult ICUs to the provision of PIC should be acknowledged and formally recognised as part of the service. Furthermore, there should be active support for these units from major/regional centres.

There are clearly only a few adult ICUs which admit significant numbers of children. However, a more detailed analysis of adult ICUs is required to identify units which have available the full range of facilities; support services and appropriate staff to care for critically ill children. It is likely that only a few adult ICUs could meet the recommendations above, and it is in these units where efforts need to be concentrated. It is imperative that any nationally agreed standards or guidelines for PIC must apply equally to both adult ICU and paediatric ICU.

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# Paediatric admissions to general adult intensive care units: BACCN survey report

Paul Fulbrook, Julie Pearce and Martin Hind

The publication of the British Paediatric Association (BPA) report (BPA 1993) focused both government and media attention on the provision of facilities for intensive care for critically ill children in UK. It drew attention to the fact that substantial numbers of critically ill children were being cared for either within intensive care facilities designated for adults (20.5%) or general ward areas. It criticised the national lack of paediatric intensive care facilities, calling for regionalisation of the service with a substantial increase in the number of Registered Sick Childrens Nurses (RSCNs) working within paediatric intensive care. The recommendations of the report were based on a BPA survey which has since been severely criticised: 'the report was not accompanied by a rigorous and systematic review of the relevant research literature and the authors do not clearly distinguish those conclusions which are the result of judgement, opinion and a priori assumptions and those based on research evidence' (NHS Centre for Reviews and Dissemination 1994, p 2).

Despite the growing scepticism regarding the value of the report, it has nevertheless been instrumental in fuelling the debate regarding the best means of providing an efficient paediatric intensive care service in the UK within current resources, and many Health Commissions have subsequently addressed the provision of paediatric intensive care facilities. The report also provided some data regarding the level of provision of paediatric intensive care which is provided outside designated paediatric intensive care units (PICUs).

In August 1993 the British Association of Critical Care Nurses (BACCN) carried out a survey of all known general adult intensive care units (AICUs) in the UK (291). Its purpose was to gain information on staffing levels and skill mix of nurses working in AICUs during the time periods of 1 April 1992–31 March 1993 (period 1) and 1 April 1993–31 July 1993 (period 2). The survey included the collection of some data relating to the care of children within these units. These data are relevant to the current debate.

For the purpose of this survey a child was defined by age 0–16 years. However, it is acknowledged that the maturity of some adolescents would make it inappropriate to classify them as children. As such it would probably be inappropriate to care for them in designated paediatric areas.

## RETURN

291 AICUs were sent a questionnaire. 182 questionnaires were returned (62.5%), not all of which were fully completed. Despite follow up by telephone a poor return was achieved from London, Northern Ireland and Wales. 157 units (54%) provided information relating to paediatric intensive care in period 1, and 153 units (52.5%) provided information for period 2.

## FINDINGS

### Admissions

#### Period 1 (1 year)

Thirty-two out of 157 (20.4%) general AICUs admitted no children at all during period 1. In the remaining 125 units a total of 1781 children were admitted. The number of admissions ranged from 1 (11 units) to 84 (1 unit). The mean number of paediatric admissions for all units was 11.3 ( $n=157$ ), or 14.2 ( $n=125$ ) when units who admitted no children at all are excluded. In 14 units (8.9%) paediatric admissions represented 10% or more of total admissions.

#### Period 2 (4 months)

Forty-four out of 153 (28.8%) general AICUs admitted no children at all during period 2. In the remaining 109 units a total of 544 children were admitted. The number of admissions ranged from 1 (22 units) to 32 (1 unit). The mean number of paediatric admissions for all units was 3.6 ( $n=153$ ), or 5.0 ( $n=109$ ) when units who admitted no children at all are

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excluded. In 11 units (7.2%) paediatric admissions represented 10% or more of total admissions.

Table 1 shows the percentage of units which admitted 10 or less children, between 11 and 20 children, or more than 20 children. (Units supplying data: period 1,  $n=157$ ; period 2,  $n=153$ .)

The age range of children admitted to AICUs is presented in Table 2. Distribution of ages is expressed as a percentage of the total number of paediatric admissions.

### RSCN staffing

On 1 April 1992, 28.1 whole time equivalent (WTE) RSCNs were employed in a total of 22 (13.3%) out of 165 AICUs which provided data (mean 1.3; range 0.5–4.0;  $n=22$ ). On 1 April 1993 the number of RSCNs employed had increased to 39.6 WTE in 30 (18.0%) out of 167 AICUs providing data (mean 1.3; range 0.5–4.0;  $n=30$ ). No statistical correlation was found between the number of children admitted to AICUs and the number of RSCNs employed within those units.

## DISCUSSION

### Paediatric admissions to AICU

It is clear that only a minority of AICUs admit a significant number of children, and it is perhaps these units where attention should be focused. Research, or at least audit, is needed to establish the level of intensive care provision which such AICUs are able to offer. This should be considered in terms of appropriately qualified nursing and medical staff, and the resources which are available to support the care of critically ill children.

Further research is required to determine the quality of care provided for critically ill children in AICUs, since it is possible that the small numbers are in fact an indication that there is a rational approach to the admission of children to AICUs. It is possible that the majority of children admitted to AICU are in fact level 1, or at most level 2 (see BPA 1993 for 'level' criteria), and those children requiring

Child admissions	% of Units period 1 (%)	% of Units period 2 (%)
$n \leq 10$	61.0	91.5
$n = 11-20$	22.0	7.0
$n > 20$	17.0	1.5

Table 2 Age of children

Age (years)	Period 1 (%)	Period 2 (%)
0-4	45.6	46.0
5-9	18.8	22.8
10-14	20.2	26.1
>14	15.4	5.1

specialist paediatric intensive care are being transferred to the appropriate regional centre.

Whilst the admission data, and staffing predicaments described below seem to add support to the BPA's (1993) call for regionalisation of PICU services (which many would regard as the ideal), this is not a viable option since the resources required for such a development are not currently available. Furthermore, it is difficult to justify the potentially dangerous transfer of a child with an upper airways disorder to a regional centre. This is particularly relevant since research evidence suggests that the majority of children admitted to district general hospital ICUs are admitted with a diagnosis of respiratory illness (Barry & Hocking 1995).

The BPA's suggestion that there should be three distinct levels of intensive care provision seems a logical approach and merits support, and allows greater emphasis to be focused on a rational improvement of the service which is currently available.

From the BACCN data, relating to just over 50% of all AICUs in the UK, it is possible to extrapolate a crude estimate of the total number of children admitted to AICUs (assuming 291 general AICUs). On the basis of period 1's data it may be projected that approximately 3300 children are admitted to AICUs per annum. Extrapolating from period 2's data (which does not take into account seasonal variations) it may be estimated that approximately 3100 children are admitted to AICU per annum. It is not clear how representative the BPA survey data (BPA 1993) are of all AICUs, but it would appear that their figure of 2627 paediatric admissions to AICU may well be an underestimate of the actual admissions.

The provision for paediatric intensive care in the UK requires further research. There are no UK data available to support the notion that critically ill children who are cared for in designated paediatric ICUs have any better outcome, either in terms of mortality or morbidity, compared to their paediatric counterparts in AICUs. The research data which are available originate from Australia and the USA, where neither the geography nor the type of provision are comparable to that in the UK. It has been suggested that to provide every child needing intensive care with a bed in a PICU



'would require a huge expansion of the present services' (Kelly & McErlean 1992). However, it is possible, as suggested by Shann (NHS Centre for Reviews and Dissemination 1994, p33), that there are, in fact, enough paediatric intensive care beds – but not enough PICU nurses – and that if the service were to be regionalised the actual number of PICUs should be *reduced*.

### Age of children admitted to AICU

From the BACCN data it is evident that the majority of children admitted to AICUs are in the 0–4 age range. Although data regarding admission diagnosis were not collected, it is probable that respiratory disorders accounted for most admissions. Data are not yet available to assess properly the effect on paediatric ICU admissions of the recent *Haemophilus influenzae* type B (HIB) vaccination programme, although local evidence is that admission rates in the above age group have been significantly reduced. This current reduction must be taken into consideration when calculating future provision of PICU beds.

### RSCN staffing in AICU

The issue of RSCN staffing in AICU is currently very topical, and some of the points raised in the following discussion may be regarded as contentious. However, this should not preclude them from being raised for debate.

The findings of this survey, albeit limited with respect to the return, suggest that there is very limited provision of RSCN staffing for children admitted to AICUs. However, the results regarding the small number of paediatric admissions to the majority of individual AICUs make it very difficult, in terms of cost, to justify the employment of RSCNs in these units. Additionally, RSCNs may not be adequately experienced or qualified to care for the adults who comprise the majority of admissions. It is also important to note that the future generation of RSCNs i.e. those who have undertaken *child branch* within Project 2000 courses are not qualified to care for adult patients. This will severely limit the usefulness of employing such nurses in units where the majority of patients are adults.

Whilst the lack of qualified RSCNs in AICUs where children are cared for has attracted a lot of attention, it may be suggested that it is neither realistic nor appropriate to stipulate that all such units must employ RSCNs. This is neither necessary or cost-effective, as the BACCN data suggest that the majority of units admit less than 10 children per year. It

also denies the fact that paediatric nursing expertise can exist without RSCN qualification. Other options such as rotation from the paediatric ward should be considered, with the emphasis on a partnership approach to meeting the needs of critically ill children and their families. This notion is supported by the Department of Health (DoH 1991, p33) who recommended that in areas (other than paediatrics) where children are being cared for, a children's nurse should be available for advice 24 hours per day. Somewhat in contradiction to this guideline, the DoH also recommend that whether a paediatric intensive care service is provided within a PICU or a 'designated area within an adult ICU' the nurse in charge should have an RSCN qualification (DoH 1991, p 13). The National Association for the Welfare of Children in Hospital (NAWCH) recommend that 'intensive care units should only be identified as suitable for children if they have a separate cubicle and an arrangement to second RSCNs to the unit when a child is admitted' (NAWCH 1989, p 22).

A more realistic approach for AICUs who admit significant numbers of children would be to match the proportion of RSCNs employed with the proportion of children admitted within these units. A flexible approach to shift planning could further improve the situation.

Whilst nursing expertise is a prerequisite for the provision of paediatric intensive care it must be considered alongside the necessity for appropriate medical expertise. In the UK there is currently no formal medical training programme for paediatric intensive care, and few doctors (even those working in designated PICUs) can claim to be qualified paediatric intensivists.

In units where there is considered to be appropriate medical expertise to care for critically ill children financial resources should be made available to ensure that adequate numbers of RSCNs are employed.

Calling for increased employment of RSCNs as a solution to the problem of nursing children in AICUs is a gross oversimplification of the problem. There is currently a deficit in the number of RSCNs employed in designated paediatric areas (DoH 1993), let alone AICUs. Additionally, there is little incentive – either motivational or monetary – for RSCNs to move to an AICU where their specific paediatric expertise may only be employed for a small percentage of their work-based time. It is not enough to state that more RSCNs are needed, or even to make the money available to pay them; the whole issue of incentive must be addressed. It is highly probable that the appeal of AICU is confined to nurses who already work there. The realistic (though



costly) alternative is to train AICU nurses in paediatrics. Access to shortened RSCN courses is difficult for nurses based in adult units, and the ENB 415 (paediatric intensive care) course, which would be appropriate, is denied to nurses who are not already RSCN qualified. The need for a flexible service cannot be overemphasised. The flexible deployment of appropriately qualified staff would enable a more effective response to the unpredictable nature of paediatric admissions to intensive care.

The nursing profession must address the issue of who may look after a critically ill child, since there seems to be an assumption that only an RSCN is capable of this. Whilst many might argue that it is desirable for all children to be cared for by RSCNs, the reality is that this is clearly not the case since all paediatric units employ non-RSCNs.

The whole issue of training for paediatric intensive care in relation to AICUs must be addressed, since an RSCN (without additional educational preparation) is not appropriately qualified to care for either adults or critically ill children.

## CONCLUSIONS

The BACCN data has provided some information regarding the number and age range of children admitted to AICUs in the UK. Most units admit less than 10 children per annum and the majority of paediatric admissions are in the age range 0–4 years. Few AICUs employ RSCNs, although the data for 1993 indicates that there is a trend towards increasing employment of them.

There are many issues relating to the provision of paediatric intensive care which are unresolved. In particular, the question of who is qualified to care for a critically ill child (both nursing and medical personnel) must be addressed. Whilst the agreed ideal is that 'all critically ill children should be nursed in paediatric intensive care units' (NAWCH 1989, p22) there are many problems inherent in such a seemingly simple solution. For example, current PICUs may not be in the appropriate geographical location. Further work is necessary to assess and justify the need for increasing regional paediatric intensive care facilities, although there are clearly some geo-

graphical regions where PICU provision is lacking (see BPA 1993).

Although standards have been set (Paediatric Intensive Care Society 1992) there are currently no UK data available which would enable the effectiveness of paediatric intensive care (within either AICU, PICU or elsewhere) to be assessed. If the service is to be properly developed then such work must be undertaken. Not until a full range of data is available to enable a comprehensive analysis of paediatric intensive care to be undertaken can the effectiveness of care, both in terms of mortality/morbidity and cost-effectiveness, be assessed. Only then can clear policy statements be formulated for the future. In order to increase our knowledge in this area research funds must be made available.

At the end of the day it must be the needs and interests of each critically ill child which receive paramount consideration:

'The critically ill child is first and foremost a child and requires care from paediatric and nursing staff trained in paediatrics and in the paediatric aspects of intensive care. The more seriously ill the child, the more important it is that the medical and nursing team are attuned to problems which are peculiar to paediatrics' (BPA 1987).

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# Core body temperature measurement: a comparison of axilla, tympanic membrane and pulmonary artery blood temperature

Paul Fulbrook

**This research study was undertaken to examine the relationship between pulmonary artery blood temperature (regarded as the 'gold standard' measurement for core body temperature), axilla temperature using the Tempa.DOT Ax chemical thermometer and tympanic membrane temperature using the Diatek 9000 InstaTemp thermometer. Sixty adult intensive care patients had their temperatures monitored. A single set of five simultaneous temperatures, i.e. left and right axilla, left and right tympanic membrane (TM), and pulmonary artery (PA) blood were recorded. The mean difference between left and right TM temperatures was 0.58°C, and although both were moderately well correlated with PA temperature ( $r = 0.63$  and  $0.78$ , respectively) the mean differences between the two sites were clinically significant (0.85°C and 0.94°C, respectively). The range of differences between the sites was significant. Plotting limits of agreement showed that both left and right TM temperatures may be up to 1.2°C above or 1.3°C below PA blood temperature: a clinically**

**unacceptable range. In particular, large temperature differences were recorded when patients were lying with one side of their head to a pillow. Fan therapy directed to the head was not found to affect these differences significantly. The mean difference between left and right axilla temperatures was 0.36°C, and although both were modestly correlated with PA temperature ( $r = 0.48$  and  $0.53$ , respectively) the mean differences between the two sites were clinically significant (0.47°C and 0.50°C, respectively). The range of differences between the sites was particularly significant. Plotting limits of agreement showed that both left and right axilla temperatures may be up to 1.2°C above or 1.6°C below PA blood temperature: a clinically unacceptable range. Because the range of temperature differences found between PA blood and the other sites was so great, it is concluded that neither the chemical axilla thermometer nor the tympanic membrane thermometer used in this study are clinically reliable tools for adult intensive care patients.**

## INTRODUCTION

The accurate monitoring of core body temperature is nowhere more important than within an intensive care setting, where it is vital to monitor and detect changes so that early intervention can occur (Fulbrook 1993a). Traditionally, invasive methods of core body temperature assessment such as rectal probes/thermometers have been used in the belief that a more accurate reading is gained. However, there is an emergent body of research evidence which suggests that non-invasive methods such as axilla temperature measurement using the mercury thermometer (Giuffre et al 1990, Heidenrich & Giuffre 1990, Fulbrook 1993a) and tympanic membrane (TM) temperature using infrared technology (Erickson & Yount 1991, Ferrara-Love 1991, Summers 1991, Flo & Brown 1995, Nathan et al 1995, Yeo et al 1995) are equally valid. However, the 'gold standard' for core body temperature measurement is pulmonary artery (PA) blood temperature (Shellock & Rubin 1982, Fulbrook 1993b) since 'the observed temperature is the result of convective mixing of blood from all over the body' (Bligh 1973).

The technological development of new and faster ways to measure core body temperature has led to a plethora of products becoming

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available on the market. Additionally, there is an 'eco' drive to reduce the use of mercury within hospital settings (Blumenthal 1992), and its use is already widely restricted throughout Europe. However, many instruments are being used within clinical settings for which they may not have been research-tested. One such area is intensive care.

## PURPOSE OF THE STUDY

The purpose of this study was to determine the reliability and accuracy of two alternative methods of measuring core body temperature within an adult intensive care setting: TM temperature using the DIATEK 9000 infrared aural thermometer; and axilla temperature using the Tempa.DOT Ax disposable chemical thermometer. Validity and reliability of the two tools were assessed by comparison with values obtained from a pulmonary artery catheter thermistor.

## Hypothesis

The null hypothesis that was tested was that there would be no significant differences between the TM, axillary and PA blood temperatures.

## METHOD

### Subjects

The subjects were all adults (i.e. over 16 years of age) drawn from a convenience sample of patients admitted to a single intensive care unit over a 3-month period. Intensive care patients

were chosen for this study because they regularly have PA catheters inserted, which are necessary to obtain the measurements of PA blood temperature. No PA catheters were inserted specifically for this research, so the patients were self-selecting in that they required a PA catheter as part of their therapeutic management.

## Procedure

The instruments and procedures for temperature measurement are described in the Box. Internal validity of the measuring instruments was accepted according to the manufacturers' specifications, although the TM thermometer was calibrated prior to use. PA catheters were inserted as described by Shellock & Rubin (1982) and checked for correct position by chest radiography and pulmonary arterial waveform.

A single set of five simultaneous temperature measurements was taken from each subject: right and left axillary temperatures; right and left TM temperatures; and PA blood temperature. Data were collected by designated intensive care nurses who had been specifically trained in the use of both measuring instruments. During the period of study, room temperature was also monitored and remained relatively constant throughout at 26.1°C (SD 1.31).

## Statistical analysis

Statistical differences between the measuring instruments and within the sample were analysed using the *t*-test. The strength of the relationships between the different sites/instruments was analysed using Pearson's product moment correlation.

It should be noted however, that the absence of statistically significant differences between mean values and/or significant correlation coefficients are insufficient analyses to validate the use of alternative measuring instruments and may be misleading (Altman & Bland 1983, Bland & Altman 1986). Few studies have effectively answered the question 'Do the two methods of measurement agree sufficiently closely?' (Altman & Bland 1983). Computing and plotting limits of agreement are a more informative way to analyse concordance between different measuring instruments (Altman & Bland 1983, Bland & Altman 1986, Liehr et al 1995). The mean difference  $\pm 2$  SD are known as the limits of agreement (Bland & Altman 1986) and may be graphically demonstrated by plotting the mean difference of two measuring instruments against the average of the two instruments. Provided differences within  $\pm 2$  SD of the mean difference are not

### Box Definition of terms

**Pulmonary artery blood temperature:** temperature is recorded from a continuous digital temperature display and is obtained from a thermistor in the distal tip of a pulmonary artery catheter sited in the patient's pulmonary artery

**Pulmonary artery catheter:** Baxter Edwards Health Care Corporation Swan-Ganz catheter 93A-831-7.5F (Edwards Critical-Care Division, USA)

**Axillary temperature:** temperature is obtained from the sensor matrix of a single-use, disposable clinical thermometer placed high in the axilla against the torso and parallel to the patient's body for a period of 3 minutes with the arm firmly positioned to the side

**Disposable single-use clinical thermometer:** Tempa.DOT Ax single-use clinical thermometer (PyMaH Corporation, USA)

**Tympanic membrane temperature:** temperature is obtained from an electronic aural thermometer, set in 'core' mode, and placed in the external auditory canal for a period of approximately 1 second. The temperature is electronically calculated from the emission of infrared radiation within the ear canal

**Electronic aural thermometer:** Diatek 9000 InstaTemp infrared aural thermometer (DIATEK Incorporated, USA)



clinically significant, the two measurement methods may be used interchangeably (Bland & Altman 1986). This simple graphical analysis was therefore also undertaken. Data were analysed by computer using SPSS (Statistical Package for Social Scientists) software.

## RESULTS

### Subjects

Sixty subjects each had simultaneous recording of body temperature taken at five different sites: right ear; left ear; right axilla; left axilla; and PA blood. The sample consisted of 42 males and 18 females whose mean age was 63.4 years (SD 14.0, range 19–86).

### Tympanic membrane temperature

Paired TM temperatures were obtained from all patients and are presented in Table 1. No statistically significant difference was found between left and right TM temperatures, but the differences in the maximum and minimum temperature ranges should be noted. The strength of the relationship between left and right TM temperatures was moderately strong ( $r = 0.63$ ,  $P < 0.0001$ ). The difference between left and right TM temperatures was also calcu-

lated for each subject and expressed as a positive value (mean  $0.58^{\circ}\text{C}$ , SD 0.51). Sixty-seven per cent of subjects ( $n = 40$ ) had a clinically significant TM temperature difference (Giuffrè et al 1990) of  $>0.2^{\circ}\text{C}$ . Of these, a significant 20% of subjects ( $n = 12$ ) had a TM temperature difference of  $>1.0^{\circ}\text{C}$ . One subject's temperature difference was  $>2^{\circ}\text{C}$ .

The subjects' positions and whether or not they were subjected to fan therapy to the head were noted during data collection. Twelve subjects were laid with their right ear to the pillow; 10 with their left ear to the pillow, 16 with fan therapy to the right side of the head, and 12 with fan therapy to the left side of the head. A total of 37 subjects had at least one of the above confounding variables. TM temperatures differences within the group were analysed and are presented in Table 2.

A statistically significant difference ( $0.94^{\circ}\text{C}$ , SD 0.67,  $P < 0.05$ ) was found between right and left TM temperatures with subjects lying on the right side. However, although the difference when lying on the left side was clinically significant ( $0.85^{\circ}\text{C}$ , SD 0.50) it was not statistically significant. Fan therapy as a single independent variable did not influence TM temperature. There were no greater statistically significant differences found in the nine subjects who were both lying on their side and had fan therapy to the head. However, the greatest statistical significance ( $0.71^{\circ}\text{C}$ , SD 0.56,  $P < 0.01$ ) was found in the group of 37 subjects who were either lying on their side and/or had fan therapy to the head.

TM temperatures were also compared with PA blood temperature. A difference of  $0.47^{\circ}\text{C}$  (SD 0.53, range 0–2.4) was found between left TM and PA blood temperatures, and the two were moderately correlated ( $r = 0.63$ ,  $P < 0.0001$ ). The difference between right TM and PA blood temperatures was  $0.5^{\circ}\text{C}$  (SD 0.4, range 0–1.7), and a stronger correlation was shown ( $r = 0.78$ ,  $P < 0.0001$ ). There were no statistically significant differences between either of the means of the two tympanic temperatures and PA blood temperature. When left and right TM temperatures were collapsed to a single variable (i.e. the mean average of the two temperatures), a slightly stronger correlation with PA blood temperature resulted ( $r = 0.79$ ,  $P < 0.0001$ ). The mean difference between TM (average of left and right) and PA blood temperatures was  $0.37^{\circ}\text{C}$  (SD 0.32, range 0–1.6). On two occasions, the difference was  $1^{\circ}\text{C}$  or more. The limits of agreement between left and right TM temperatures and PA blood temperature are shown plotted in Figures 1 and 2, respectively. Both left and right TM temperatures may be  $1.2^{\circ}\text{C}$  above or  $1.3^{\circ}\text{C}$  below PA blood temperature.

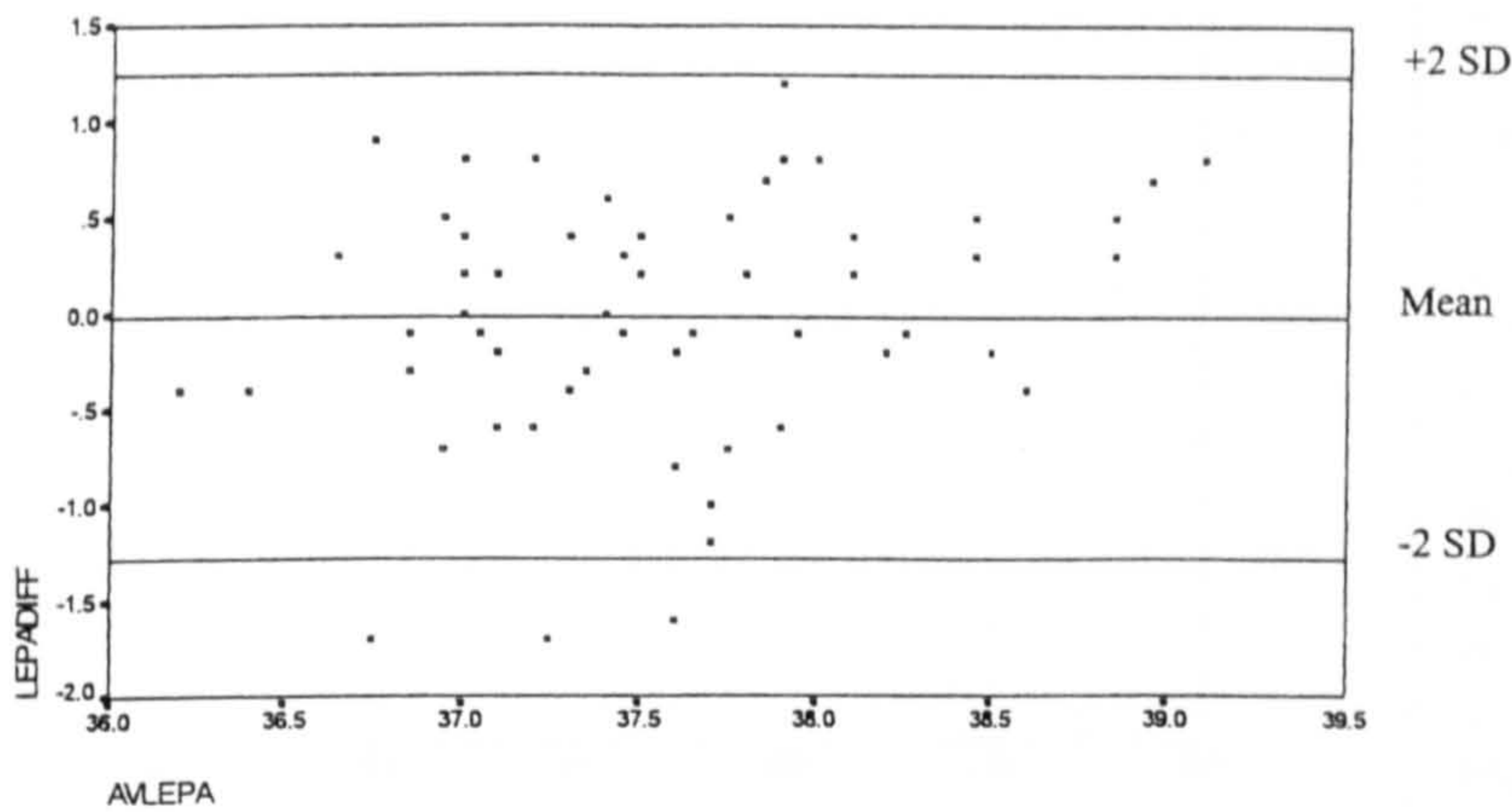
**Table 1 Tympanic membrane temperatures  $^{\circ}\text{C}$**

	Mean	SD	Min	Max	<i>n</i>
Right ear	37.56	0.98	34.9	40.3	60
Left ear	37.57	0.78	35.9	39.5	60
Right/left ear difference	0.58	0.51	0.00	2.30	60

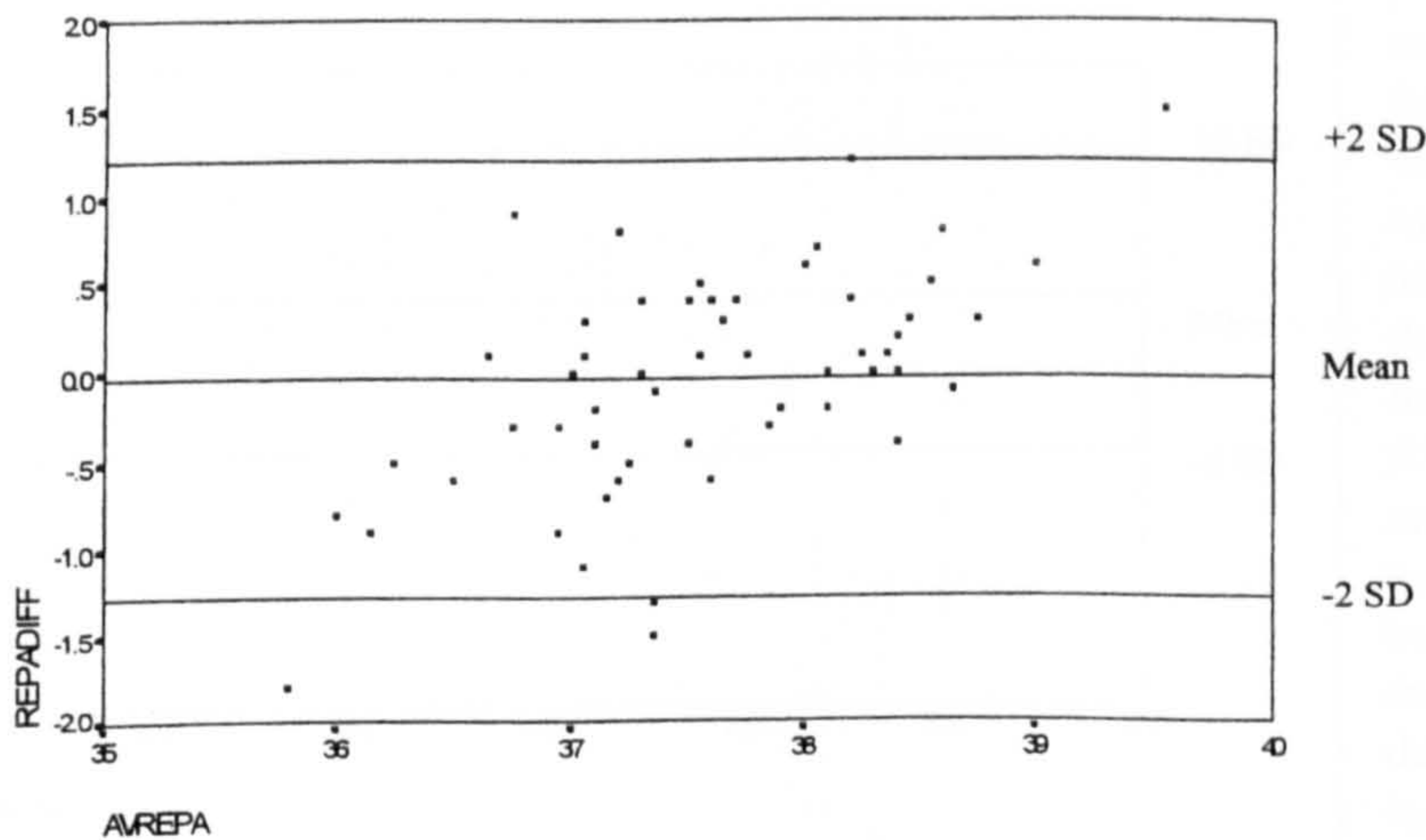
**Table 2 Tympanic membrane temperature when side lying and/or fan therapy**

Position	Right/left ear temp difference ( $^{\circ}\text{C}$ )	SD	<i>P</i>	<i>n</i>
Lying on right	0.94	0.67	0.043	12
Not lying on right	0.49	0.43		48
Lying on left	0.85	0.50	NS	10
Not lying on left	0.52	0.50		50
Fan on right	0.60	0.51	NS	16
Fan not on right	0.57	0.52		44
Fan on left	0.61	0.46	NS	12
Fan not on left	0.57	0.53		48
Lying on left and fan on right	1.00	0.52	NS	5
Remaining group	0.54	0.50		55
Lying on right and fan on left	0.90	0.54	NS	4
Remaining group	0.55	0.51		56
Lying on right or left and/or fan on right or left	0.71	0.56	0.006	37
Remaining group	0.37	0.34		23





**Fig. 1** Agreement of left aural temperature measurement with pulmonary artery blood temperature measurement ( $^{\circ}\text{C}$ ). AVLEPA: (left ear temperature + PA blood temperature)/2. LEPADIFF: difference between left ear temperature and PA blood temperature.



**Fig. 2** Agreement of right aural temperature measurement with pulmonary artery blood temperature measurement ( $^{\circ}\text{C}$ ). AVREPA: (right ear temperature + PA blood temperature)/2. REPADIFF: difference between right ear temperature and PA blood temperature.

### Axilla temperature

Paired axilla temperatures were obtained from all patients. Results are presented in Table 3. No statistically significant difference was found between left and right axilla temperatures, and they were moderately correlated ( $r=0.58$ ,  $P<0.0001$ ). However, there was a clinically significant difference of  $>0.2^{\circ}\text{C}$  in 22 subjects (37%). In six subjects (10%), the difference was  $1^{\circ}\text{C}$  or more, and of this group the difference was greater than  $3^{\circ}\text{C}$  in one subject.

Left axilla temperature correlated modestly with PA blood temperature ( $r=0.48$ ,  $P<0.0001$ ) as did right axilla temperature

( $r=0.44$ ,  $P<0.0001$ ). However, although the difference between left axilla and PA blood temperatures was significant (mean difference  $0.47^{\circ}\text{C}$ , SD 0.53,  $P<0.05$ ) the mean difference between right axilla and pulmonary artery blood temperatures ( $0.50^{\circ}\text{C}$ , SD 0.51) was not.

When left and right axillary temperatures were collapsed into a single variable (the mean average of the two) and compared with PA blood temperature, a slightly improved correlation resulted ( $r=0.52$ ,  $P<0.0001$ ), although the difference between the values remained statistically significant (mean difference  $0.46^{\circ}\text{C}$ , SD 0.45,  $P<0.05$ ).

The limits of agreement between left and right axillary temperatures and PA blood temperature are shown plotted in Figures 3 and 4, respectively. Both left and right axillary temperatures may be  $1.2^{\circ}\text{C}$  above or  $1.6^{\circ}\text{C}$  below PA blood temperature. Although the mean difference between average (left and right) TM and average (left and right) axilla temperatures was neither statistically significant nor clinically significant ( $0.16^{\circ}\text{C}$ , SD 0.74), it should be noted that on 11 occasions the difference was at least  $1^{\circ}\text{C}$  and two subjects had at least a  $2^{\circ}\text{C}$  difference. A moderate correlation was obtained ( $r=0.48$ ,  $P<0.0001$ ) between average TM and average axilla temperatures.

## DISCUSSION

### Tympanic membrane temperature

A moderate correlation was found between left and right TM temperatures, and no statistically significant differences were found between the two sites. Whilst the mean difference between left and right TM temperatures was  $0.58^{\circ}\text{C}$ , the frequency of large clinical differences was significant, with two-thirds of the sample ( $n=40$ ) recording a temperature difference of  $>0.2^{\circ}\text{C}$ . This in itself is sufficient evidence to question the reliability of the TM thermometer for estimation of core body temperature. In a recent study of 100 adult emergency department patients comparing rectal and tympanic membrane temperatures, utilizing the FirstTemp thermometer, a significantly higher correlation was obtained between left and right TM temperatures ( $r=0.94$ ), although the correlation with rectal temperature was only moderate ( $r=0.7$ ; Yaron et al 1995). In a smaller study ( $n=57$ ), TM temperature was found to correlate moderately well with oral mercury temperature ( $r=0.60$ ; Flo & Brown 1995), and in a similarly sized sample of surgical patients ( $n=60$ ) comparing tympanic and oral temperatures, higher correlations were obtained ( $r=0.77$ – $0.85$ ;

**Table 3** Axilla temperature ( $^{\circ}\text{C}$ )

	Mean	SD	Min	Max	<i>n</i>
Right axilla	37.43	0.69	35.7	38.7	60
Left axilla	37.83	0.68	35.0	38.8	60
Right/left axilla difference	0.36	0.52	0.00	3.10	60



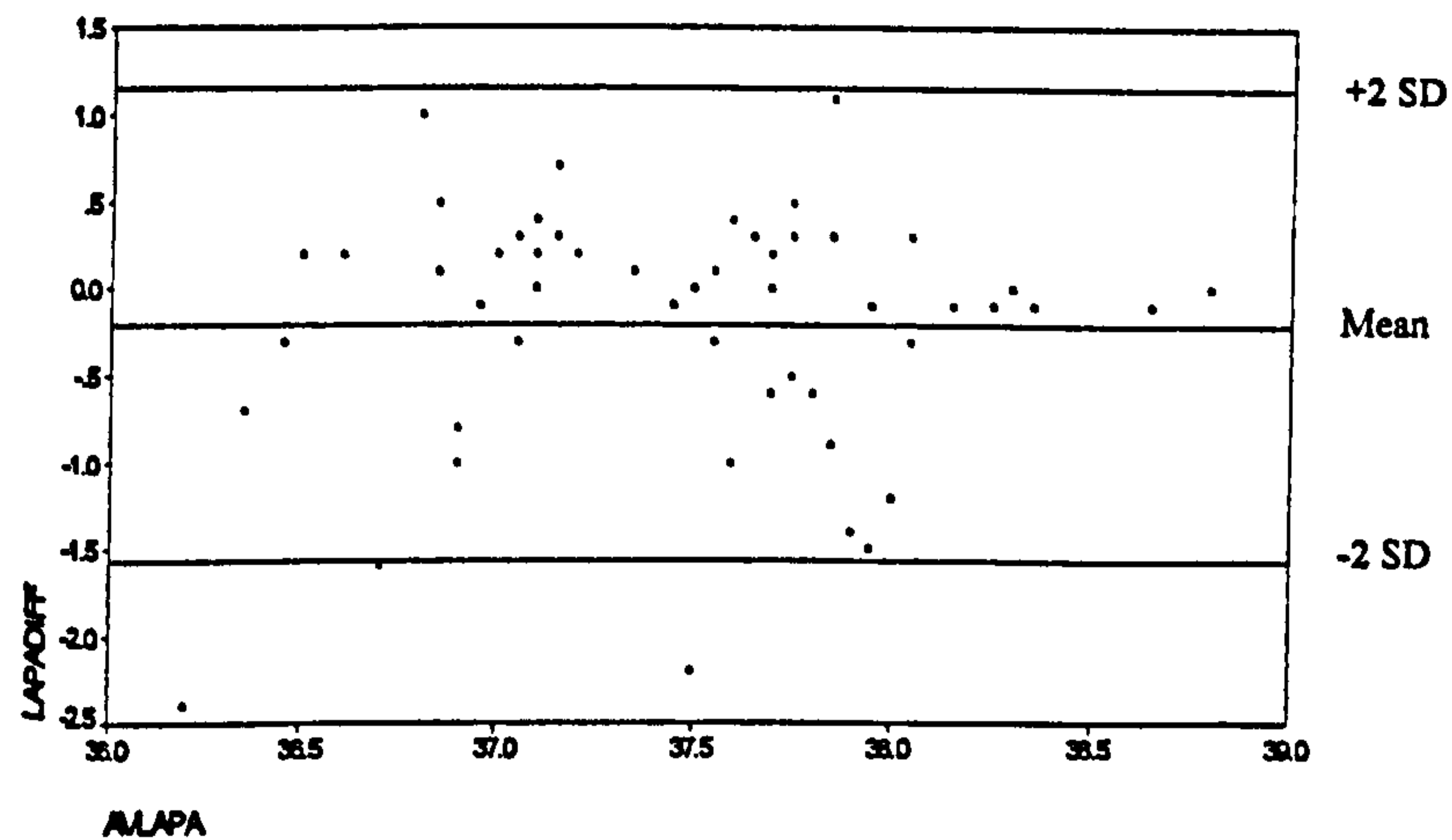


Fig. 3 Agreement of left axilla temperature measurement with pulmonary artery blood temperature measurement ( $^{\circ}\text{C}$ ). AVLAPA: (left axilla temperature + PA blood temperature)/2. LAPADIFF: difference between left axilla temperature and PA blood temperature.

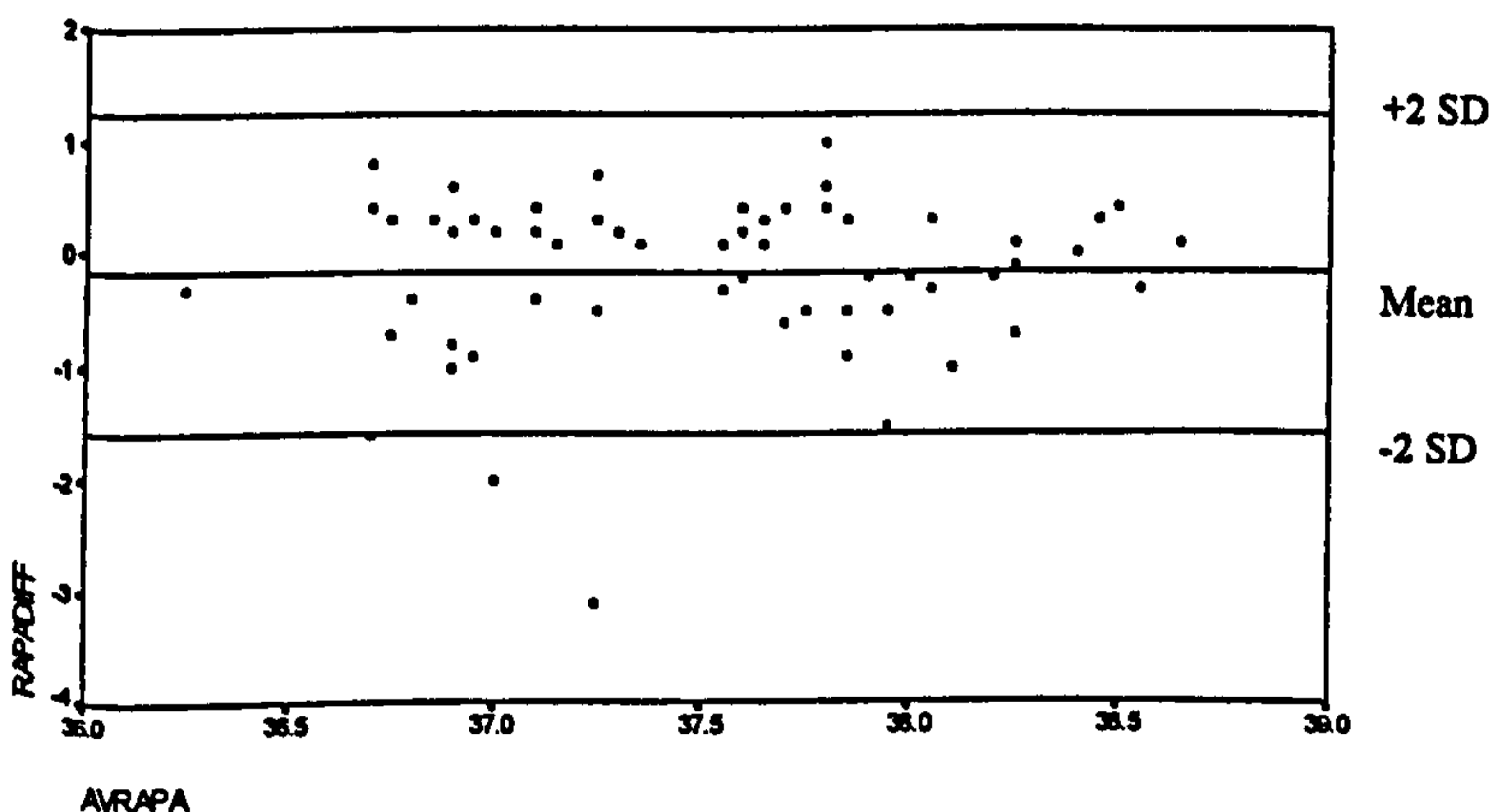


Fig. 4 Agreement of right axilla temperature measurement with pulmonary artery blood temperature measurement ( $^{\circ}\text{C}$ ). AVRAPA: (right axilla temperature + PA blood temperature)/2. RAPADIFF: difference between right axilla temperature and PA blood temperature.

Erickson & Yount 1991). In Summers' (1991) study of 96 post-surgical patients, no statistically significant differences were found between tympanic and oesophageal temperatures, although the difference between the two mean values was reported as  $0.7^{\circ}\text{C}$ , which is clinically significant. The tympanic thermometer may not be as reliable as oral thermometers for detecting fever (Hooker & Houghton 1996), but it is also suggested that ear-based temperatures are most sensitive when detecting temperatures above  $38.3^{\circ}\text{C}$  (Schmitz et al 1995).

Clearly, the differences found between left and right TM temperatures found in this study limit the clinical usefulness of the infrared thermometer for intensive care patients. Fan therapy to the head and the position of the subject's ear to the pillow were prospectively thought to be likely factors that would affect TM temperature difference. The results from this study indicate that fan therapy to the head has a negligible effect, whereas when a patient is lying

with his or her ear to the pillow, the difference between left and right TM temperatures, although clinically significant, was found to be statistically significant only when the patient was lying on his or her right side (Table 2). In practice it would be unusual for a patient's head to be raised in order to measure the temperature in the dependent ear. However, it is likely that a patient who has recently been lying on his or her side (but is now lying with the recently dependent ear uppermost) will record a higher than normal temperature in that ear. Had all the subjects been supine or sitting, for example, this study might have yielded a higher left to right correlation. This finding is supported by Gimbel & Philipsen (1996), who researched the relationship between rectal and TM temperatures using the FirstTemp tympanic thermometer and rectal mercury thermometers. They found a median temperature difference between the two sites of  $0.34^{\circ}\text{C}$  with a correlation coefficient of 0.7 ( $n = 155$ ) and advised that 'care should be taken not to measure the temperature in an ear on which the patient has been lying recently'. Additionally, it is suggested by Nathan et al (1995) that errors with tympanic thermometry may be related to the patency of the external meatus or operator error. In their study, which compared infrared and thermocouple tympanic thermometers, they found large temperature differences (defined as  $>0.3^{\circ}\text{C}$ ) in 6% of their sample of 150 adults.

In this study, the greatest left/right TM temperature differences were found in the patients who were both lying on their left ear and had fan therapy to the head ( $n = 5$ ). In this group, the mean temperature difference was  $1^{\circ}\text{C}$ . In the subjects who were both supine and had no fan therapy to the head ( $n = 23$ ), the mean difference between left and right TM temperatures was significantly lower at  $0.34^{\circ}\text{C}$  (Table 2).

Although the data were not collected in this study, another factor that may affect the accuracy of TM temperature is cerumen occlusion, which tends to lower the temperature reading by between  $0.13^{\circ}\text{C}$  (Hasel & Erickson 1995) and  $0.3^{\circ}\text{C}$  (Doezema et al 1995). A degree of cerumen occlusion may have accounted for some of the larger differences found in this study.

TM heat generated by the inflammatory response in otitis media is another factor that may influence the TM temperature (Summers 1991), but it is also suggested by Ralph (1987) that both cerumen and inflamed tissues should be the same temperature as the TM.

Both left and right TM temperatures correlated moderately well with PA blood temperature ( $r = 0.63$  and  $0.78$ , respectively) and



showed a very slightly improved correlation ( $r = 0.79$ ) if an average value for left and right ears was used. This is in stark contrast to Henker & Coyne's (1995) study contrasting a variety of sites and instruments, where a very poor correlation was found between PA blood temperature and TM temperature, using two different instruments ( $r = -0.16$  and  $0.19$ ).

Although in this study no statistically significant differences were found between TM temperatures and PA blood temperature, and the correlations were moderate, this is insufficient to support their use as an accurate estimate of core body temperature. By examining the limits of agreement (Figs 3 and 4), it can be seen that both left and right TM temperatures may be between  $1.2^{\circ}\text{C}$  above and  $1.3^{\circ}\text{C}$  below PA blood temperature. Such extremes are clinically unacceptable.

### Axilla temperature

This study revealed a moderate correlation ( $r = 0.58$ ) and no statistically significant differences between left and right axilla temperature readings, although the mean of the differences was  $0.36^{\circ}\text{C}$  (SD  $0.52$ , range  $0-3.1^{\circ}\text{C}$ ), which is a clinically significant difference. Of the sample, 24 subjects (40%) recorded a left/right axilla difference  $>0.2^{\circ}\text{C}$ , six subjects (10%) recorded a difference of  $1^{\circ}\text{C}$  or more and one subject recorded a difference of  $>3^{\circ}\text{C}$ . The frequency and magnitude of these differences is clinically important and the use of the single-use chemical thermometer cannot be advocated on the basis of these results. Rogers' (1992) research, however, supports the use of the chemical thermometer. She compared axilla readings using the Tempa.DOT chemical thermometer with use of a conventional mercury thermometer placed in the axilla, for 62 children. Whilst the chemical thermometer gave the higher reading in 79% of cases, the mean difference between the two thermometer types was only  $0.25^{\circ}\text{C}$  (SD  $0.3$ ). On this basis, she supports the clinical use of the chemical thermometer. However, her study was based on mercury readings obtained from one axilla and chemical readings from the other axilla. It was therefore based on the assumption that both axillae were of the same temperature. Since this may not always be the case (Howell 1972 cited in Sims-Williams 1976), her conclusions are questionable. Additionally, Rogers' mercury thermometers were only left in place for 5 minutes, whereas research in adults suggests that they should be left in place for between 8 (Nichols et al 1966) and 12 minutes (Fulbrook 1993a). They may not therefore have reached their peak temperature in Rogers' (1992) study. In a more recent study comparing the use of mercury and chemical

thermometers on children (Payne et al 1994), paired readings were taken in both axillae. A total of 281 paired readings was obtained, although the authors do not clarify the sample size. The chemical thermometer recorded mean values  $0.29^{\circ}\text{C}$  higher than the mercury thermometer. The authors suggest that the higher values may be accounted for because the chemical thermometer is 'designed to record temperature on the side of the axilla closest to the vessels of the chest wall whereas the bulb of the mercury thermometer, being round, records from all sides of the axilla'. The assumption appears to be that the higher reading is in fact the more accurate in relation to true core body temperature. However, because PA blood temperature was not recorded simultaneously for comparison, their suggestion is purely conjecture.

Although left and right axilla temperatures both correlated modestly with PA blood temperature in this study ( $r = 0.48$  and  $0.44$ , respectively) the difference in means was clinically significant ( $0.47^{\circ}\text{C}$ , SD  $0.53$  and  $0.5^{\circ}\text{C}$ , SD  $0.51$ , respectively), although it is interesting to note that only the difference between the left axilla and PA blood temperature obtained statistical significance. When left and right axilla readings were averaged as a single variable, a slightly improved correlation resulted ( $r = 0.52$ ) but the difference in means remained both statistically and clinically significant. In Henker & Coyne's (1995) comparative study, a mean difference of  $<0.3^{\circ}\text{C}$  between the axillary chemical thermometer and PA blood temperature was found, with a stronger correlation ( $r = 0.74$ ) than that obtained in this study.

As with the TM temperatures, the real test of fit to determine the equivalence of the axilla temperature measured using a chemical thermometer in relation to PA blood temperature is graphical analysis of limits of agreement. The relationships between left and right axilla and PA blood temperatures are shown in Figures 3 and 4. In both cases it can be seen that axilla readings may be as much as  $1.2^{\circ}\text{C}$  above or  $1.6^{\circ}\text{C}$  below PA blood temperature. This range of deviation is clinically unacceptable.

Although not the prime intention of this research, data from this study also enabled comparison of axillary with TM temperatures. Both left and right axillary and TM temperatures were collapsed into single variables (the mean values of each of the left and right sites) to enable this comparison. The *t*-test revealed no significant difference between the means of the two variables, and the difference of  $0.16^{\circ}\text{C}$  is clinically insignificant. The two variables correlated moderately well ( $r = 0.48$ ) but again, because of the frequency and magnitude of the differences found, their interchangeability for clinical practice is questionable.



## Conclusions

On the basis of data collected in this study, neither the Diatek 9000 InstaTemp tympanic membrane thermometer nor the Tempa.DOT Ax single-use chemical thermometer have been shown to be reliable and accurate methods for estimating core body temperature. It is clear that traditional statistical analysis of differences between the means (*t*-test) and correlation (Pearson's product moment correlation) are inadequate measures to validate the use of the instruments since the graphical plotting of limits of agreement between the 'gold standard' measurement of PA blood temperature and the two alternative methods of temperature measurement has clearly demonstrated the lack of agreement between the two.

The data analysis does indicate that major differences between left and right TM (and thus also TM/PA temperature differences) are largely explained by the dependent position of the ear to the pillow. On this basis, it would be inadvisable to recommend the use of TM thermometry for intensive care patients, who are frequently positioned on their sides.

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## Advanced nursing practice: an historical perspective

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The nature of advanced practice is unclear. Furthermore, the role of the advanced practitioner, that is, the exponent of advanced practice, has yet to be made explicit in the literature. 'The profession is uncertain about what the advanced practitioner really is' (Castledine, 1991b). It is not only in the UK where there is uncertainty:

The synonymous use of terms such as expert, specialist and advanced practitioner in the North American literature has led to confusion, since advanced nursing practice may differ from other forms of nursing practice, such as specialist or expert practice (Sutton and Smith, 1995).

The meaning of advanced practice in the current literature is defined by broad generalizations...however, the common thread which links these roles and explains their common goal has not been made explicit (Patterson and Haddad, 1992).

In the current climate of professional development in nursing, the concepts of 'advanced practice' and 'advanced practitioner' require clarification. Tracing their historical development will help to shape current understanding, and the purpose of this chapter is to place advanced practice within the context of contemporary nursing.

### Overview

The concept of the advanced practitioner has long been established in the USA, although it is normally associated with the role of clinical nurse specialist (CNS). The American model of advanced practice is based on the key concepts of clinical judgement and leadership (Spross and Baggerley, 1989) and has been recognized there for many years, having developed from the notion of the nurse clinician, which was first advanced by Reiter in the 1940s (Hamric, 1989), and later written up by her (Reiter, 1966). In 1970, the *American Journal of Nursing* published a collection of papers relating to the CNS (Lewis, 1970). Thus, it was not until the 1970s, and following explication by Georgopoulos and Christman (1970, 1973), that the role was



effectively introduced and recognized in the clinical practice setting (Hamric, 1989).

In the UK, the concept of advanced practice (in the guise of a clinical specialist/consultant nurse) was first considered by the Royal College of Nursing (RCN) in the early 1970s in response to the Briggs Report (Department of Health and Social Security (DHSS), 1972). Later, the RCN's *New Horizons in Clinical Nursing* put forward the case for an advanced clinical role and proposed the development of a clinical nurse consultant (Royal College of Nursing (RCN), 1975). However, possibly because it was suggested in the wake of the Salmon report (Ministry of Health and Scottish Home and Health Department, 1966), and the subsequent introduction of a clinical nursing structure with what was arguably an overemphasis on management, the role failed to gain acceptance. An additional obstruction to its development may have been the assertion that the role of clinical nurse consultant 'should attract salary recognition consistent with the level of responsibility and the high degree of expertise' (RCN, 1975). Ironically, the role was also seen as a potential threat to senior clinical nurses (Duberley, 1976; Barrie-Shevlin, 1985).

The literature reviewed in this chapter reveals only limited development of advanced practice in terms of an advanced practitioner role in the UK over the last 20 years or so. However, several advanced roles have been developed, the most notable of which are the consultant nurse (e.g. Wright, 1991) and the lecturer-practitioner (e.g. Lloyd-Jones, 1993). Although these roles are focused on nursing practice, and do include a clinical practice component, the former may be led more by the management structure, whereas the latter appears more educationally based. Logically, the term 'advanced practitioner' suggests that the role should be driven by clinical practice. There are also many examples of CNS roles in the UK (Castledine, 1992), and while most of these roles tend to have a fairly narrow specialist focus, it may be argued by some that advanced practice is implicit within them.

Following the 1983 health service reorganization, many hospitals employed CNSs (Sargeant, 1985), but there was still little evidence mentioned in the literature of advanced practice. In the UK, the role of the CNS appeared to develop on a somewhat individual basis, driven by local service demands, rather than according to a professional framework such as that described by Hamric and Spross (1989). One example of this new CNS role (in the UK) was described by Sargeant (1983), who considered the subroles to be clinical nurse advisor, practitioner, counsellor, educator, manager and administrator. The role, however, seemed to be biased towards a management agenda rather than clinical practice per se.

Thompson and Webster (1986) appraised the role of the CNS in relation to critical care nursing, but were unable to identify clearly its components. They felt that there were many grey areas, that the issues were 'dogged by confusion and lack of uniformity', and that the lack of a clearly defined structure for the role had inhibited its development. They supported their point by citing McFarlane (1980), who suggested that the bureaucratic nursing structure of the National Health Service (NHS) was not responsive to such changes and did not easily accommodate innovatory development.

In 1988, the career structure of nursing was radically altered with the



introduction of clinical grading (Nursing and Midwifery Staff's Negotiating Council, 1988). Although it was intended to reward nurses for clinical advancement, it is arguable that it has failed to do so adequately, since one result of implementing this structure has been that the clinical career ladder of nursing has effectively been cut off at sister level. Kersley (1992) makes the important point that the lack of recognition and financial reward for clinical expertise runs the risk of losing such staff to education and management, leaving the clinical area 'bereft of leaders and lacking direction'. This may be one of several factors that have restricted the growth and development of advanced practitioners.

In order for the role of advanced practitioner to be professionally recognized, it would seem prudent to determine clear guidelines for the role within a defined career structure. The need for a clinical career structure for nursing has been emphasized in the past by the RCN in two publications: *Towards Standards* (RCN, 1981) and *Towards a New Professional Structure for Nursing* (RCN, 1983). The latter publication, whilst proffering a new career structure failed to describe an advanced practitioner role as such. This is somewhat disappointing, since it had been developed from an RCN seminar on advanced clinical roles published only a year earlier (RCN, 1982).

If a career structure was developed that incorporated the advanced practitioner, it would require the distinction to be made between advanced practitioner, clinical specialist, CNS, and in particular, the current nurse practitioner (NP) role which has been widely implemented in recent years.

A decade ago, an RCN working party proposed the concept of a nurse specialist, who they described as an expert 'in a particular aspect of nursing care' who 'demonstrates refined clinical practice, either as a result of significant experience or advanced expertise, or knowledge in a branch or specialty' (RCN, 1988). They went on to state that it is because 'there is no formally recognised position...within the present structure...that it is difficult to recognise who is functioning in this role' (RCN, 1988). A number of other professional titles compound the problem, for example, clinical expert, clinical nurse manager, nurse consultant, and senior clinical nurse. It is possible that although there are many different roles, they may all, in fact, be advanced practitioners. It is also possible that there are many practitioners who have a title that suggests they are advanced, when in fact they are not. Much of the confusion regarding advanced nursing practice seems to stem from different terms used to describe the person. This source of confusion may be compounded as these titles are often used interchangeably. Thus, nurses can never be sure they are discussing the same concepts. This can only add uncertainty about the broad nature of advanced nursing practice (Albarran and Whittle, 1997).

The concept of advanced nursing practice has been evident in the UK for the last 20 years or so (Ashworth, 1975; Castledine, 1983; RCN, 1975). In 1990, in its Post-Registration Education and Practice (PREP) Project document, the United Kingdom Central Council for Nursing, Midwifery and Health Visiting (UKCC) stated: 'The standard, kind and content for advanced practice will be specified by the Council. Advanced practitioners must have an appropriate Council-approved qualification recorded on the register' (UKCC, 1990).



Castledine, an advocate of advanced practice since the early 1980s, suggests that this was the first time that an official announcement had ever been made in the UK regarding the development of an advanced practitioner. He bemoaned the fact that the 'political and professional road to identification of advanced practice has been a continual uphill struggle' (Castledine, 1992). Indeed, this was underlined by the extremely slow progress made following the publication of PREP (UKCC, 1990). Despite wide consultation and debate, consensus about the nature, scope and criteria of advanced practice has not been reached (UKCC, 1996).

The current professional view, which is accepted by many, is that individuals who are at an advanced level should be engaged in developing and advancing clinical practice, research, and education, stretching professional boundaries in the delivery of patient care, and pioneering new roles that reflect changing needs, as well as influencing local and national health care policies (UKCC, 1994, 1997).

To give context to the present situation, it is necessary to trace and examine the major forces that have shaped the evolution of a clinical career structure that currently revolves around the professional, specialist and advanced levels of clinical practice (UKCC, 1994). Movement has been influenced by a number of factors, including professional developments, educational and health service reforms, a desire to retain clinical experts at the bedside, and a drive to advance excellence in the delivery of nursing services and strengthen the profile of clinical practice (Ashworth, 1975; Castledine, 1983; Pearson, 1983; Wright, 1986). However, this path has been neither coherent nor based on a systematic approach.

In the light of the above, the aim of this chapter is to discuss the historical development of advanced nursing practice and to identify how various milestones have influenced its passage.

## **The American influence**

Concepts of advanced nursing practice have long been recognized in the USA, where they have traditionally been associated with the characteristics of the CNS. However, most commentators credit Reiter (1966) as a key protagonist of advanced practice, whose ideas on the nurse clinician (a term that she first coined in 1943) later evolved to become central to the CNS role. For Reiter (1966) a nurse clinician was 'a master practitioner throughout all the dimensions of nursing practice'. Additionally, other responsibilities entailed being able to demonstrate advanced knowledge, high levels of clinical judgement, and competence in a particular field of nursing. Moreover, the sole purpose of introducing nurse clinicians with a high level of skill and theoretical insight was to improve patient care, which Reiter (1966) conceived to be in jeopardy. With subsequent publications (Lewis, 1970) and further research, the role of the CNS began to be widely adopted and accepted in the USA. Statutory bodies also supported this clinical enterprise and mandated the level of education for such positions as graduate preparation (Amos-Taylor and Elberson, 1989). It was, presumably, reasoned that the grounding of nurses to the level of CNS would equip them with the leadership to enhance quality of care by advancing



clinical theory and practice. However, these expectations were based on anecdote, assumption, speculation and belief, rather than on empirical evidence. There was also a lack of agreement on the attributes required to define the role of the CNS, and the position such an individual should hold in existing nursing hierarchies.

It was a small experimental study lasting 13 months, however, which suggested that nurses who were prepared for CNS roles were able to deliver sophisticated individualized nursing care based on careful systematic planning, scientific knowledge in patient care, and innovation (Georgopoulos and Christman, 1970). The CNSs in the study exercised discretionary judgements and acted as expert role models and as a resource for members of the health care team. In contrast, it was observed that the work of the non-CNSs in the control group tended to be dominated by crisis management and administrative tasks, with care organized around rituals and based on a physician-led model of practice. Thus, for Georgopoulos and Christman (1970), a CNS was a registered nurse in possession of postgraduate preparation relating to a specialist area of nursing practice, who was able to provide a comprehensive and competent level of care as well as an informed expertise about patient needs. They suggested that the contribution of such roles was encouraging, and long-term benefits would result if the appropriate organizational supportive measures were instituted.

Concurrent with the above project, another study set out to investigate the influence of CNS behaviour, as determined by 'Kardex' entries (nursing notes), when compared with a non-CNS control group (Georgopoulos and Jackson, 1970). Although all subjects demonstrated improvement in key categories of documentation, the experimental group tended to be more patient focused, with greater detail and coverage of nursing activity. As such, it was concluded that nursing practice was superior in those units led by a CNS.

As empirical evidence accumulated on the impact of advanced practitioners based on the positive effects on patient outcomes (Sparacino, 1986; Amos-Taylor and Elberson, 1989), the CNS role was endorsed by the American Nurses Association (American Nurses Association (ANA), 1976). Later, in a social policy statement (ANA, 1980), they proposed that a CNS should be a qualified nurse who, through study and supervised practice at graduate level (master's or doctorate), has become an expert in a selected sphere of nursing. Additionally, the earlier document (ANA, 1976) emphasized that the CNS must provide leadership for staff development, education, consultation and research, and for directing patient care. These reports alluded to core values that have since been aligned under the umbrella of advanced nursing practice, although role components within models of advanced practice varied (Spross and Baggerly, 1989; Sparacino et al., 1990; Heffline, 1991).

Sparacino (1986) argued that persistent disagreement regarding the functional division of CNS roles had led to slow maturity and sanctioning of this level of nursing practice by the profession, as well as explaining why these roles have been often either underutilized or misunderstood.

Georgopoulos and Christman's (1970) work drew much interest in the UK, and, since their work was based on ward sisters, Duberly (1976) thus reasoned that these individuals were the natural CNSs, and, as experts in



their own field, were most appropriately suited to improve perceived falling standards. For Duberly (1976), a separate CNS role was unnecessary, and, if implemented, would 'only result in disillusionment and frustration'. However, it was in response to other contemporary nursing initiatives, including the introduction of nationally validated clinical courses in a range of specialty settings, practice and academic developments, and the impact of NHS reorganizations, which began slowly to materialize into a trajectory that placed advanced nursing practice on the professional stage. Castledine (1991a) charted how various events in nursing history have converged into the concept of advanced nursing practice. These events will now be discussed in greater detail.

### **The specialization of clinical practice**

Many nurse theorists have credited recognition of the importance of delivering specialized and advanced patient care to Florence Nightingale, who recruited and taught her nurses how to care and treat wounded and injured soldiers during the Crimean War (Amos-Taylor and Elberson, 1989). A landmark publication was Nightingale's *Notes on Nursing* (1859), which was specifically aimed at professionally trained nurses, and the establishment of the Nightingale School of Nursing in 1860. In addition, Nightingale was responsible for seeking to emphasize the relationship between nursing as a profession and as a specialization, and did so by highlighting the difference between hired untrained workers and practitioners who had been prepared at St Thomas' Hospital in London (Castledine, 1994). Nightingale (1859) also observed that it was 'not uncommon, in small country hospitals to have a recess or a small room leading from the operating theatre; in which patients remain until they have recovered from the immediate effects of the operation'. Implicit in this was the recognition that patients needed to be cared for by nurses who were prepared with a distinct set of skills for closer observation. Moreover, as surgical techniques and interventions evolved, hospitals began to design recovery rooms, special care units, and cubicles to contain infectious patients. Thus the term 'specialist' began to be applied to nurses who had experience of these fields (Amos-Taylor and Elberson, 1989).

Like medicine, specialization within nursing began to grow during Nightingale's era. Subsequent world conflicts resulting in other developments in, for example, resuscitation, triage, and surgical and anaesthetic techniques, demanded that nurses should acquire additional clinical expertise to care for the victims of war (Menard, 1987). It was, however, the Nurses' Registration Act of 1919 that first formally divided nursing into four specialties, namely: sick children, mental nursing, care of the mentally handicapped, and fever nursing, although specialty in this sense related to the skills and knowledge associated with a particular medical disorder or disease process (Castledine, 1994).

The ensuing provision of different training courses that were open to recruits entering the profession can in itself be viewed as an acknowledgement that meeting the demands of a changing population required nurses who were prepared according to specialist educational programmes.



Indeed, qualification and appointment to staff nurse, on whatever part of the register, meant, in the view of Kratz (1976), being on the road to specialization. Kratz did, however, make the distinction that a specialist working in a particular field of medicine did not equate with the range of responsibilities, knowledge, expertise and authority associated with a CNS role.

The title of CNS, while originally American, had been introduced and adopted by the RCN (1975). However, notions of advanced nursing practice remained implicit in the role (Castledine, 1992). The growth of specialization and clinical expertise was equally due to progress in health care technology, and as a result of patient treatments becoming more sophisticated and elaborate, which, in turn, led to the division of medicine into specialties (Castledine, 1982; Menard, 1987). This was rapidly followed by the creation of specialist wards or care units. As a consequence of nurses practising in such areas, their skills and knowledge were enhanced and their perspectives on patient care more focused. In response to these developments, demands for nursing expertise increased, as did the recognition of the content embedded in clinical nursing (Castledine, 1982). Stemming from these changes, nurses' traditional roles began to extend and expand into new spheres, although, in many instances, these were discarded technical skills and/or responsibilities that were traditionally exclusive to medicine. Measuring blood pressure was the earliest example, although a more significant development, perhaps, was when nurses undertook intravenous drug administration. More recent examples include such skills as venous cannulation, defibrillation, electrocardiography and urethral catheterization.

Weston (1975) points out that in the USA, with regard to the community services, roles such as paediatric NPs and physician assistants emerged as a result of new medical graduates pursuing a hospital based career rather than entering general practice, which, in turn, left the family health care services without the necessary medical resources. Subsequently, concern was expressed about the possible loss of nursing core values, as it was uncertain that nursing care was consistently incorporated into such roles, since nurses were being trained according to a medical model of treatment. Weston (1975) questioned whether these developments were legitimate areas for the profession, as it seemed that nurses in these roles were being utilized as a means of cost containment and to ameliorate service deficiencies. It is interesting to note that support for these roles, and that of the CNS, was forthcoming by some physicians who viewed such innovations as complementary to medicine and a further opportunity to collaborate and improve patient care (Bates, 1970). More recently, with the projected shortage of physicians entering medicine, the American College of Physicians (1994) has also reiterated its commitment to supporting the need for collaboration and for the regulated expansion of NPs and physician assistants.

With regard to the UK, the development of specialist nursing practice can be in part ascribed to the innovations of some key centres. The Royal Marsden Hospital, for example, was one of the earliest institutions to appreciate the need for specialization, and thus began to educate the nurses working there with the relevant skills and knowledge to enable them directly



to meet the increasingly complex needs of patients and instigate innovations to improve the provision of care (Tiffany, 1984; Markham, 1988). Moreover, there was an emphasis on continuing education, which was viewed not as 'a luxury for the privileged few, but rather a necessity for advanced nursing practice' (Tiffany, 1984). These CNSs were also expected to incorporate research and educational functions, as well as provide advice when consulted. The specific areas where such roles were developed included intravenous therapy, nutritional support, stoma care, community liaison, infection control and care of the terminally ill (Tiffany, 1984; Wilson-Barnett, 1985).

Throughout the UK, nurse specialism spread across many settings. In most cases, however, nurses were only providing technical competence with prescribed procedures or tasks, rarely with an opportunity for forging new directions in clinical nursing. In reality, as nurse specialists, they were either relieving the work of doctors or had chosen to specialize in certain aspects of nursing rather than within the clinical setting (Thompson and Webster, 1986).

Other pioneering roles evolved from the Bethlem and Maudsley Hospitals, where the nurse therapist became established in answer to progress made in behavioural psychotherapy (Castledine, 1991a). Community psychiatric nurses also began to broaden their expertise and increase their contribution to patient care. At Guy's Hospital, the liaison psychiatric nurse was one role that was introduced in response to a recognition that specialist care was required for patients who became confused, or suffered psychosis or depression after a surgical operation or illness. The postholder was regarded as an expert who was available for consultation and for advice to general nurses. While this particular innovation did not receive the wide publicity (Wilson-Barnett, 1985) of those cited by Tiffany (1984), they were nevertheless all perceived as examples of advanced practice, as each was effectively breaking new ground in nursing.

Head (1988) described one of the forerunning specialist roles in the accident and emergency department in the guise of a NP whose purpose was to assess, treat and refer patients, utilizing individual nursing knowledge and skills to enhance the quality of services. However, this role arose to a great degree from the external pressures of deficiencies in service provision and a need to ensure the effective use of manpower resources.

In the opinion of Wilson-Barnett (1985), advanced nursing roles were about improving the well-being of patients and meeting any inadequacies within health care. Thus, the 1970s and 1980s witnessed the proliferation of clinical specialization in the health service. This, in turn, appeared to mandate that nurses working in specialist units/departments should be equipped with a combination of attributes that involved clinical expertise and additional education in order to deliver sophisticated and advanced care, as well as improve standards of practice. By implication, this seemed to denote a distinct level of practitioner.

In spite of the above, the adoption of a specialist ideology within nursing has not been smooth. In the past, many in the profession have felt threatened or have sought to control the growth of specialisms and professional education by adhering to a generalist view of nursing as a practical occupation (Dulfer, 1981; White, 1985). Others, for example



Chapman (1983), have argued that the specialization of nurses would potentially fragment the care of patients rather than augment the holistic concept. For Thompson and Webster (1986), there was an equal risk that future clinical nurse specialisms may arise from 'medically derived or politically instigated need' as opposed to a nursing core. Additionally, some claimed that specialists resented sharing their knowledge, jealously guarding it and using it principally as a source of power and status (Chapman, 1983). Similarly, Georgopoulos and Christman (1970) had earlier warned that the manner in which the role developed should not relate to the degree of specialist knowledge, but to the abilities and personality of each individual in motivating and collaborating in their commitment to innovation. Yet, as White (1985) notes, the generalist view of nursing opposed the acquisition of additional education as well as the development of professional accountability, preferring practitioners to have a broad knowledge base. This contrasted with the interests of the specialist lobby, who, through academic study, sought to develop beyond first level registration, increase their clinical competence, and deepen their knowledge within their chosen field, as well as achieve professional autonomy and accountability for their practice (White, 1985).

Apart from internal mechanisms, specialties in nursing have also arisen in response to a number of other factors. Economic constraints, cultural diversity, changing patterns in health care needs (HIV, for example), and the increased age of many within the population, have collectively affected the provision and delivery of health services. Similarly, national priorities such as *The Health of the Nation* (Department of Health (DoH), 1992) have led to specialty roles being forged in order to meet the needs of patients with heart disease or strokes, or those affected by cancer. Such roles now include rehabilitation and palliative nursing. In more technical areas, perhaps as a result of financial and efficiency drives, nurses are now able surgically to remove veins in preparation for coronary artery bypass grafting (Holmes, 1994) as well as insert central venous lines (Hamilton et. al., 1995). However, as will be seen later, these developments only cloud the issue further when attempting to unravel the essence of advanced nursing practice.

### Academic and clinical initiatives

Running parallel with global specialization (Handy, 1985), British nursing also witnessed a number of clinical and academic initiatives that were inspired by Manchester University and the Manchester Royal Infirmary (MRI). This impetus was directed by a growing awareness that, with clinical promotion, expert nurses either lost contact or were rarely able to participate in direct patient care (Castledine, 1982; Pearson, 1983). The work of Biddulph (1976) was an important clinical landmark. In this project, three experienced sisters based at the MRI were supported in advancing their existing roles as clinical specialists in the areas of orthopaedics, psychiatric liaison and neurosurgical nursing. Concurrently, the department of nursing at Manchester was actively pursuing the development of practice through the introduction of the nursing process,



nursing models, nursing curriculum and master's degree courses in clinical nursing (Castledine, 1991a, 1994).

Prior to this, clinical practice and educational programmes had been dominated by the achievement of tasks, traditions, administration and a medicalized framework of care based on disease management. With the implementation of the nursing process and models of care, the visibility of clinical nursing began to increase (for example, McFarlane and Castledine, 1982; Webb, 1986). Nurses began to adopt ward philosophies in order to make explicit their perceptions about nursing and their role, the nature of their patients, and health-related needs that underpinned their approach to nursing care (Wright, 1986). Coupled with this, an emphasis on collaborative partnerships with patients and the need for individualized care became a professional priority. As a result of the close links between the MRI and Manchester University, joint appointments were established in 1980, an idea that was later taken up in other centres (Tiffany, 1984; Wright, 1986).

As the demand for CNSs escalated, Castledine (1982) set out to examine their role in the UK. In his research, CNSs were questioned by means of a Delphi technique, with some additional more detailed data being generated from a subset of respondents by interview. The data analysis generated 11 factors that were considered necessary to the role of the CNS (Table 1.1), although it is interesting to note that only a few of the respondents in the study fulfilled all the criteria.

**Table 1.1. Criteria for the CNS role (after Castledine, 1982)**

- 
1. Continued involvement in direct patient care
  2. Directly responsible and accountable for nursing actions
  3. Ideally should be clinically educated above registration level and possess a bachelor of nursing degree, but preferably a masters degree
  4. Involved with clinical nursing research
  5. Involved in education programmes and have teaching responsibilities that may include patients, relatives and any member of the health care team
  6. Able to co-ordinate care with other health care professionals, or lead the organization of a patient's total health care
  7. Should be expert in the nursing process approach to nursing care
  8. Viewed as an expert by peers and thus able to act in a consultant capacity
  9. Has freedom and flexibility within the role
  10. Is actively engaged in and concerned with the dissemination of practice through publication and conferences
  11. Act in a liaison capacity between hospital and community
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What was evident from this investigation was the recognition that there were no national guidelines on professional preparation for such posts, nor was there a system for rewarding higher levels of clinical practice; indeed, some CNSs held low-paid positions. With regard to the suggested educational preparation, only a few facilities offered a masters programme with a clinical option, thus a postbasic course and a diploma in nursing were viewed as more realistic achievements. This position had been previously reached by the RCN (1975).

In other spheres, Pearson (1983) and Wright (1986), also from Manchester, pioneered innovations in practice. The Burford Clinical



Nursing Unit was successfully established by Pearson with the aim of providing a holistic approach to nursing care, led and managed by nurses. This was also realized by the implementation of primary nursing, which was viewed as a means of enhancing the quality of care, and considered well-suited to enabling nurses to build closer therapeutic relationships with patients. It was also an approach that allowed the devolvement of autonomy and accountability to those making decisions for the patient's well-being. Pearson's view of advanced clinical roles was linked with the growing professionalism taking place within nursing, as well as with increasing opportunities for independent practice and for decision making (Pearson, 1983). However, for him, the vision of the clinical nurse consultant was more appealing, and was differentiated from the CNS by virtue that the former worked independently as a specialist in nursing, whereas the latter worked in collaboration, concerned with the care of patients under medical treatment.

Pearson (1983) also supported the introduction of a clinical nursing structure, which was conceived as a means of preserving the expertise of senior nurses at ward level, enabling the contribution of these individuals to the quality of patient care to be formally recognized and celebrated in terms of status and financial remuneration. In summary, Pearson speculated that advanced practitioners, in the role of clinical nurse consultants, should be engaged in teaching and supervision; concerned with the forward movement of nursing practice; improving techniques for solving patient problems; and providing professional advice as requested. It was, however, the expansion of nursing horizons that would ensure that nurses could work towards independent practice.

Meanwhile, Wright (1986) was working with similar concepts at the Tameside Development Unit, where he pursued the ideal of the consultant nurse as an advanced practice role. He suggested a registered nurse, qualified as a teacher with higher academic profile, who would be a provider of clinical excellence and expertise similar to the professional responsibilities identified by Castledine (1983) and Pearson (1983). Wright (1986) equally stressed the roles of change agent and educationalist as essential for advancing nursing practice. In addition, he promoted personalized care by redefining the bureaucratic model of care into a professional one in which clinical practice was central, and where nursing care was planned systematically in partnership with the patient and the nurse, who would assume accountability for all decisions. Such innovations in practice were key milestones in the development of advanced nursing practice, and were described as 'new nursing' (Salvage, 1990), as they had begun to challenge the accepted orthodoxy of nursing care provision.

It is worth noting that during this period, the drive that was leading these nursing initiatives was a philosophy that was embedded in the practice of nursing. Another feature of 'new nursing', spearheaded solely by practitioners, was that some clinical developments had impacted on the political agenda. Most notable of these were the adoption of primary nursing (DoH, 1989) and the named nurse concept (Wright, 1992). Additionally, the impact of the dynamic standards project (RCN, 1990), nursing development units, and the integration of a culture that fostered individualism, collaboration and sensitive nursing, contributed to transform the delivery



of nursing care. Perhaps more importantly, the 1980s accentuated the growing strength and scope of clinical practice and nurtured a vision of wider possibilities for practitioners. It was an era that reclaimed and exhorted the values of clinical excellence, creative nursing care and patient centred approaches.

More recently, at the University of Central England (formerly the Birmingham School), ongoing evaluation of their masters programme in advanced nursing practice (Brown, 1995), and of national trends, continues (McGee et al., 1997), an association of Specialist Nurses and Advanced Nursing Practitioners has been established, and a new clinical career structure in nursing, which would enable practitioners to progress to the level of advanced nurse practitioner, has been proposed (Castledine, 1997).

### Royal College of Nursing

The RCN has been a key forerunner in promoting the case for advanced nursing practice and for a clinical nursing structure. It was in 1971 that the RCN (RCN, 1975) first put forward submissions to the Committee on Nursing (DHSS, 1972) that roles such as the clinical nurse consultant should be introduced to exploit the wide contribution of nurses to the profession, and to enhance further the quality of care in an era of change and specialization. In addition, the proposals made reference to the need to provide a promotion ladder for clinical staff and the type of preparation required. However, the committee made no specific recommendations regarding the nurse consultant role; instead, it acknowledged the diverse contribution and increasing responsibilities of ward sisters, suggesting that they should be accorded increased status and reward.

Much of the opposition to nurse consultants was based on the misconceptions of nurse managers, educationalists and some practitioners. As a result, the RCN set up a working party to investigate the usefulness of these roles. The working party accepted its terms of reference with minor alterations, which included changing the title of 'clinical nurse consultant' to 'clinical nurse specialist', and, with evidence gathered from a seminar held at Leeds Castle in Kent, produced a short document entitled *New Horizons in Clinical Nursing* (RCN, 1975). Contained within were discussions about why the profession was in need of bedside experts, and it pointed to the failure of the Salmon management structure (Ministry of Health and Scottish Home and Health Department, 1966) to implement a framework that would promote the value of clinical roles. Indeed, the introduction of the nursing officer grade only served to distance the postholders away from patient care by an overemphasis on the management role at the expense of clinical activity. The additional confusion regarding the responsibilities relating to the role of a nursing officer led to dissatisfaction amongst many at a time when standards of patient care were deteriorating; thus, the need for a senior clinical leader was viewed as mandatory (Ashworth, 1975).

Following study of existing senior grades of nurses, Kerrane (1975) concluded that only the clinical teacher had the potential of becoming a CNS, although even this was uncertain. However, in the role of CNS, an



individual would be required to improve/maintain high standards of patient care by direct participation, liaison and consultation. To convert this ideal into reality, it was duly articulated that for CNSs to succeed, it was imperative that they should be suitably qualified and carefully appointed. Additionally, they should have the freedom, flexibility and necessary support in pursuit of their objectives (Ashworth, 1975). In terms of the desirable qualities for the role, substantial clinical expertise, a nationally validated certificate from the Joint Board of Clinical Studies (established in 1972) relating to the nurse's particular field of practice, and a diploma in nursing, were regarded as necessary. Once in post, it was speculated that the CNS would promote the understanding of core nursing values (which were to some extent perceived to be under threat) among other health care professionals. The findings of the seminar were presented to the Department of Health and Social Security, with the recommendation that more work needed to be undertaken.

Later, in their expression over safeguarding standards of care, an RCN (1980) discussion paper continued to endorse clinical specialists. For the RCN (1980), in order to improve the quality of service provision, it was desirable that nurses should be armed with the skills of assessing, planning, implementation and evaluation. While the ward sister was recognized as the lynch pin, and most able to set, implement and monitor standards of care, the recommendations of the working party suggested that avenues should be considered for enhancing and expanding this role in terms of a clinical career structure that could facilitate the establishment of posts such as clinical nurse consultant. Thus, in summary, the RCN (1980) was reflecting views that had been expressed earlier (RCN, 1975). In a follow-up paper, *Towards a New Professional Structure for Nursing* (RCN, 1983), it was emphasized that a greater need for knowledge was necessary in nursing, as this would enable practitioners to become systematic and analytical in their practice and thus contribute to the quality of patient care. However, as Fulbrook (1996) notes, while the document proffered a new vision of a clinical career structure, it was notable that descriptions of advanced nursing practice were absent. This was disappointing, as only a year earlier the College had published a proposal for advanced clinical roles (RCN, 1982).

Amid the continued proliferation of specialist roles and concerns about the misuse of titles, the RCN responded by convening a group charged with investigating the development of specialties in nursing, as well as providing criteria that would distinguish the nurse specialist from other roles (RCN, 1988). The arguments put forward for having nurse specialists were linked to the increased and diverse knowledge base of nursing and the need to integrate further a broader theoretical basis into practice. It is interesting to note that no reference was made to previous work, or to the roles of a clinical nurse consultant or a CNS. The document stated:

Nurse specialists are experts in a particular aspect of nursing care...they demonstrate refined clinical practice, either as a result of significant experience or advanced expertise, or knowledge in a branch or specialty...Specialist practice involves a clinical and consultative role, teaching, management, research and the application of relevant nursing research. Only if a nurse is involved in all of these is [he or] she a specialist (RCN, 1988).



It was reasoned that nurse specialists would bring about significant changes and co-ordinate clinical practice, and that their authority would stem from clinical credibility and managerial expertise, as well as from their position within the team. Moreover, in order to demonstrate advanced clinical practice, continuing education relating to the role was considered to be vital. However, it was also concluded that due to a lack of a 'formally recognised position for the nurse specialist within the present structure... it is difficult to recognise who is functioning in this role' (RCN, 1988). Wide professional discussion followed publication of the document. However, a small study conducted in the late 1980s reported continuing misconceptions regarding specialist nurse functions from both managers and practitioners: 'Many of the job descriptions were compiled by rather unknowledgeable managers who described the role as they would like to see it without consulting a CNS first' (Stafford, 1991).

### Political and professional influences

According to Castledine (1991a, 1994), various government reforms endorsed the role of clinical nurses, whereas the Department of Health sought possibilities to enable specialist nurses to be recognized. The Royal Commission on the NHS (DHSS, 1979) pressed for an improved career structure and suggested that there should be greater rewards available in clinical nursing and that these should be accorded on the basis of developing expertise and increased responsibility for decision making.

Within the community, Stilwell (1982) promoted the alternative, yet complementary, role of the NP as a means of assisting general practitioners in meeting the primary health care needs of patients. In this role, patients were able to seek consultations with NPs, who performed some physical examinations and provided health education on a range of conditions. They were also able to offer some treatments according to written guidelines. Stilwell (1982) acknowledged that this new independent role was challenging the traditional boundaries of nursing and medicine. Similarly, Andrews (1988) emphasized that district nurses were providing a specialist service in terms of giving direct care, co-ordinating service provision, demonstrating consultancy skills and prescribing treatment. Amongst the examples of autonomous practice achieved by highly experienced and educated nurses, Andrews (1988) lists initiating well-woman/man clinics, instigating treatments, conducting pelvic and breast examinations, and obtaining cervical smears, all of which combined relevant aspects of health education and promotion.

The drive for advanced practice roles within the community setting reflected the aspirations of the Cumberlege Report (DoH, 1986), which had given firm support for the growth of a limited number of autonomous nurse practitioners, who, with the appropriate advanced skills of health promotion, diagnosis and treatment of disease, would be able to provide a comprehensive range of, and access to, health care services. The impetus for this and other similar roles was a deficiency in the service; changing health care trends, and a lack of appropriately qualified doctors (Trnobranski, 1994). However, nurses who had attained this calibre of



practice were both well-placed to serve the community and those who were most disadvantaged regarding access to health care, and able to assist in the implementation of national and international priorities for health promotion (Trnobranski, 1994).

With the disciplines of district nursing, health visiting, school nursing and community midwifery becoming part of the health service in the mid-1970s, interprofessional divisions became less evident, and are now, with other established branches, part of community health care nursing (UKCC, 1994). Prior to this, Butterworth (1988) had reasoned that an integrated team approach bringing all eight community-based specialties together would allow community practice to develop and stimulate innovation in all areas. This would require the provision of a career structure to retain clinically based experts who could then encourage excellence in practice (Butterworth, 1988).

*The Heathrow Debate* (DoH, 1994) indicated that, as primary health care widens in scope, opportunities for nurses with the appropriate blend of skills and expertise will be recognized and demanded by a number of health care workers. This document indicated that the number of specialist nurses in the community should be balanced with generalist teams, but that it was important that nurses should be able to prepare themselves for a constantly changing environment. A more recent government initiative suggests that there should be greater scope for professional and personal achievement, as well as career opportunities for those based in primary settings (DoH, 1997). Presumably, this is in recognition that nurses are now better qualified and better able to exercise appropriate discretionary judgements and autonomy (Morrall, 1997) when entering into areas traditionally within the domain of medicine, such as nurse-led minor injury and rehabilitation clinics, nurse-led specialist services, for example, in respiratory care and dermatology, and nurse prescribing.

The implementation of community based roles has also seen the provision of a range of other specialist services that benefit patients and other professionals (Layzell and McCarthy, 1993; Briggs, 1997). Inevitably, the Government has been keen to support nurses in the expansion of their roles, since, in doing so, the quality and the effectiveness of community services should be enhanced. However, it has been assumed that new education programmes of preparation will embrace the expanded roles so that nurses can play a wider role and function as specialists in community health (DoH, 1997).

Government affirmation for clinical role development and structures that would enhance 'care provision and realise the potential for clinical practice' (DoH, 1989) was stated towards the end of the decade in the wake of Project 2000 (UKCC, 1986). A *Strategy for Nursing* went a little further by recommending that the 'contribution of specialist practitioners should be explored and developed' (DoH, 1989). It was also assumed that each of the nursing disciplines would have its own advanced practitioners, who would be engaged in the care of patients, available for advice, and actively contributing to education, training and research activities. This was a major step forward, particularly following the publication of the *NHS Management Inquiry* (DHSS, 1983), which had effectively resulted in the voice of nursing being diluted at executive level, with hierarchies undergoing



reorganization, and an era of imposed general management, which lasted most of the decade. This is nowhere more evident than in the words of Sargeant (1985), whose CNS role arose following the 1983 health service reorganization: 'My responsibilities give me few chances to nurse patients myself.' Management and administrative duties appeared to limit her clinical remit, and, for Fulbrook (1996), this role had a bias towards management rather than direct patient care, possibly reflecting the dominant ideology at that time.

Perhaps the most disappointing government publication was *A Vision for the Future* (DoH, 1993a), which, apart from suggesting that all nurses progress professionally, adds that some clinicians may develop roles as independent practitioners, providing services through private care. Clearly, the emphasis in this report was on health service policy initiatives and their achievement, though it may be reasoned that the fulfilment of these and other national health targets may be realistically and effectively expedited by the presence and contribution of advanced nurse practitioners.

In contrast, since the UKCC became established, it has, through various professional documents, recognized the expertise of practitioners. Castle-dine (1991a) acknowledges the progress made in stating that the Council 'has opened the door to further expansion and development in clinical practice'. Other policies and documents, such as the *Code of Professional Conduct* (UKCC, 1984) and the *Scope of Professional Practice* (UKCC, 1992) have stressed the increased responsibility and accountability of each registered nurse in assuring excellence in the delivery of care. Implicit within the latter, the Council empowered nurses to broaden and adjust the boundaries of professional practice with the proviso that any such expansion of their role was in response and relevant to patients' needs.

Coupled with the earlier professional educational reforms (UKCC, 1986) and later initiatives in practice development (Wright, 1992), the research of Benner (1984) drew attention to the fact that nursing expertise in the management of patient care was variable, and that nurses were not interchangeable. Indeed, the education, clinical experience and skills of practitioners meant that individuals practised at distinct levels of competency that were characterized by mastery in discerning accurately the priorities of a situation, making professional judgements, and decision making. On the strength of mounting evidence and recognition that patients with unique needs require nurses with specialist skills, the PREP report (UKCC, 1990) proposed a model of professional practice that added weight to the conviction that clinical expertise varied according to an individual's state of professional development, and officially acknowledged that advanced nursing practice was a legitimate sphere of practice.

Initially, the proposals advocated a career structure comprising three distinct areas of practice, thus enabling a newly qualified nurse at primary level to proceed to advanced practice and finally (for an elite few) to consultant level. This would be on the basis of clinical expertise and academic achievements (UKCC, 1990). The rationale for this approach was the desire to offer nurses a practice based, but academically credible, pathway for future progression, which would add coherence to postregistration educational provision. Past models of professional education had encouraged the duplication of studies, which were often unrecognized or



not credited by other professionals. The project report indicated that there would not be a registrable qualification linked with the consultant level of practice, and, although the vision was there, the terms of reference for the consultant nurse were rather vague. Possibly because it was such a new, unorthodox role, the professional body itself was uncertain what educational characteristics or clinical experience were required for this level of practice. The recommendations contained in the PREP report were widely discussed (Cole, 1991) and contested, but were finally approved with the publication of *The Future of Professional Practice* (UKCC, 1994).

The newly demarcated areas of clinical nursing included professional and specialist levels, as well as the sphere of advanced nursing practice, which:

is not an additional layer of practice to be superimposed on specialist nursing practice. It is, rather, a description of an important sphere of professional practice which is concerned with the continuing development of the professions in the interest of patients, clients and health services (UKCC, 1994).

General descriptions of the expectations associated with each level were provided, including the level of education required to progress. With regard to advanced nursing practice, it was stressed that individuals should be concerned with adjusting the boundaries of future practice, pioneering and developing new roles that were responsive to the changing health needs of the population, as well as exploring new avenues for clinical practice, research and education that would enhance professional practice. Although the domain of advanced nursing practice was not to be accorded registration, it was proposed that the level of educational preparation should equate with a masters degree.

The UKCC (1994) clearly recognized that the advanced practitioner role was critical in order to further clinical practice developments, not only as a means of establishing new horizons in clinical practice but also to serve the public and the health service in a more effective manner. In many ways, the profession was responding to increased pressures, which expected nursing practice to be comprehensive, systematic and value for money (Casey, 1991; Boylan, 1992). However, there was no blueprint to support the realization of the advanced practitioner role, and there was neither a professional nor a clinical framework for its development. It seemed that by avoiding being prescriptive, the Council appeared to many as being uncertain about how to progress.

Fulbrook (1994) was one of the few whose research sought to tackle various questions and related issues about the nature and scope of advanced nursing practice from the perspective of the practitioners themselves, concluding that advanced practice was 'a complex composite of knowledge and experience applied in a unique way according to each situation through the medium of the self...the advanced practitioner'. Two years later, Holyoake (1996) argued that advanced nursing practice should not be about seeking to shift the boundaries of practice, but rather that it should strive to push beyond them with the key aim of legitimizing nursing as a profession in its own right. On a more practical level, Sparacino (1992) suggested that the skills of the advanced nurse would include conducting comprehensive assessments and diagnoses, formulating strategies, and implementing treatment for a wide range of conditions or situations. Furthermore, these



nurses would be differentiated from others by their ability to discern priorities rapidly. They would combine their knowledge of the range of social, biological and psychological variables related to the patient to inform their professional judgement.

Other nurse theorists from a range of settings have proposed models that have variously attempted to analyse and illuminate the nature and competencies congruent with advanced nursing practice, and endeavoured to identify the conditions that may facilitate the integration of advanced roles into clinical practice (Jukes, 1996; Albarran and Whittle, 1997; Manley, 1997). Central to these examples has been cognizance of the nursing perspective, which must embrace every feature of patient treatment or care. This belief is that, unlike in many new clinical posts whose expansion has been through the medicalization of nursing practice, the essence of advanced nursing practice is in the *nursing* role (Smith, 1995; Manley, 1996).

The current situation has been confounded by the promotion of medical models of advanced practice. This thrust has been attributed in part to the reduction in junior doctors' hours (DoH, 1993b) and in part to a need to control escalating costs, to such an extent that nurses have been trained to develop the skills to assume the on-call rota job of junior doctors (McDougall, 1994). The development of such roles has been supported by government task force funds, and has most frequently been associated with nurse practitioner posts. This momentum has portrayed a false impression about the competencies and ideals linked with advanced nursing practice. What is equally relevant is that this trend has been seen as stifling opportunities for practice and displacing the unique vision of nursing (English and Lindsay, 1993; Holyoake, 1996). However, a recent study has highlighted the legal ramifications and raised questions of the professional accountability of nurses in assuming these quasi-medical posts (Dowling et al., 1996). Not only is it argued that values at the heart of nursing are being compromised, but there are warnings that:

while the traditional margins between health care disciplines begin to disappear, nurses must not lose sight of the fact that skilled specialist and advanced nursing is not about performing technical tasks but about delivering holistic patient care, a challenge that is far more demanding to fulfil... it is the benefit of intelligently planned nursing intervention rather than the performance of certain handed down technical skills that create a more lasting impression for the patient and their families (Albarran, 1996).

## Conclusion

Historically, a point has been reached in which the sum and substance of advanced nursing practice has to be made explicit, otherwise there is a risk that political forces or medico-economic agendas will either hijack or redirect the concept away from a nursing paradigm. Clearly, without the input of all health care professionals, it is likely that neither will the role of the advanced nurse practitioner gain the recognition it rightly warrants nor will the nature of advanced nursing practice encompass the broad philosophical values embodied within nursing. The visionary ideal of



advanced practice, achieved through educational and experiential preparation, may be lost. Shaping the destiny of advanced nursing practice should be viewed as an urgent priority as the profession enters the next millennium, since the decisions of today will determine the clinical practice of tomorrow.

The struggle for advanced nursing practice has been neither coherent nor deliberate, with progress being influenced by a number of internal and external forces, some of which have hampered recognition, whilst others have promoted the motives and wide benefits of advanced nursing practice. The positive drive has been propelled by a need to acknowledge and celebrate the impact that clinical nursing initiatives have on the development of high quality patient care, which goes hand in hand with meeting NHS objectives.

It has recently been suggested that advanced nursing practice may be 'the engine room for moving nursing into the 21st century' (Holyoake, 1996). However, a failure by the nursing profession to take control and to capitalize on accumulated professional strengths will openly invite others to assume the driving seat, and thus the collective efforts of the past will not have been served well.

From the history outlined above, it is clear that there is still little real understanding about the nature of advanced practice and the role of the advanced practitioner, not just in the UK, but throughout the developed world. Nursing has yet to answer two fundamental questions: 'What is advanced practice?', and 'What is an advanced practitioner?' We hope that the following chapters will go some way towards providing the answers.

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## Advanced practice: the 'advanced practitioner' perspective

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### Introduction

This chapter presents the research findings of a study that investigated the nature of advanced practice and the advanced practitioner from the perspective of 'advanced practitioners' themselves. Herein lies the first problem. How does one identify 'advanced practitioners' when, as a profession, nursing has not yet quite come to grips with the concept? A starting point has to be identified, if only so that we might enter into debate from which (hopefully) a clarification of concepts emerges. For the purpose of this research, the starting point was the identification of a number of so-called 'advanced practitioners'. The key to their selection was that they were recognized as experts in their field of clinical practice by their peers. Whether they are in fact 'advanced practitioners' is an area that remains open for debate.

The subject of advanced practice was chosen for study because its very nature is unclear. Furthermore, at a time when the UK's nursing professional body, the United Kingdom Central Council for Nursing, Midwifery and Health Visiting (UKCC), was grappling with the idea of formalizing the role of the advanced practitioner, the literature had yet to make the concept explicit. The creation of the new role of advanced practitioner was undoubtedly envisaged as vital for the health care professions by the UKCC (1994) to enable 'pioneering clinical practice'. However, that this ideal was to be achieved in the absence of either a professional framework or a recognized career structure was ambitious to say the least.

It was a belief in the value of the art of nursing that guided the research method for this study. The hope was that data would be obtained which could be used to develop the concepts of advanced practice and the advanced practitioner for nursing practice, and that, by using an inductive approach, nursing knowledge would be generated in this respect: 'Inductive research starts with specific observations or events, moves to more generalised ideas regarding concepts and possible relationships and thence to generating theory' (Couchman and Dawson, 1980). It was anticipated



that, by achieving an understanding of advanced practice from the perspective of advanced practitioners themselves, the advanced practitioner's role would become clearer. Thus, by pursuing an emic rather than etic perspective, a richer representation of advanced practice would result. Not until the concepts of 'advanced practice' and 'advanced practitioner' have been understood, and more widely explicated from the perspective of the practitioners themselves, can the role of advanced practitioner and its implications be considered in a more informed way by the profession.

The purpose of this research was to ask two questions: (1) what is advanced practice? and (2) what is an advanced practitioner? This chapter concentrates on the findings that relate to the first question, although the two are inter-related.

### Study design

Naturalistic enquiry (Lincoln and Guba, 1985) utilizing focused interviews was used as a research approach to understand what 'advanced practice' and 'advanced practitioner' are from an emic perspective. An expert group of informants was selected from the clinical specialty of intensive care nursing. The group, all recognized clinical leaders in their field of practice, were purposefully chosen because they would be more likely to be informed of the nature of advanced practice. They are described as 'key' informants, that is, people who have 'more insight into the norms and values... than others' (Field and Morse, 1996). It was felt that in order to understand what advanced practice and the advanced practitioner are, it was necessary to ask people already recognized as advanced practitioners.

Qualitative research is based on the rationale that human behaviour can only be understood by getting to know the perspective and interpretation of events of the person or the people being studied - by seeing things through their eyes (Couchman and Dawson, 1990).

It was because 'hard' science is characterized by 'reductionism, quantifiability, objectivity and operationalization' (Watson, 1981), that its rationalistic research methodology was rejected as unsuitable for this study, since it does not value personal opinion, personal experience and personal knowledge. Inherent in the rationalistic paradigm, knowledge is regarded as objective and acontextual as opposed to interpretative and context dependent, as found in the naturalistic paradigm. There is the danger when using rationalistic research approaches 'of missing a wealth of rich data of a softer nature; data which allow interpretative understanding of the phenomenon under study' (Melia, 1982).

Experiences throughout life shape one's personal identity and perspective on the world (Hospers, 1990). In the context of advanced practice, individuals will have different experiences that will have shaped their ideas and beliefs. Thus, it was necessary to employ a research method that both enabled the individual perspective to be recognized and assigned value to personal experience and knowledge. Inductive approaches are appropriate for studying areas where little is understood, and inductive theory is concerned with bringing knowledge into view (Field and Morse, 1996).



Inductive analysis... begins not with theories or hypotheses but with the data themselves, from which the theoretical categories and relational propositions may be arrived at by inductive reasoning processes (Lincoln and Guba, 1985).

Reductionist approaches may not be appropriate to understand the wholeness of nursing, which arguably should embrace all four of Carper's (1978) patterns of knowing: empirics, aesthetics, ethics, and personal knowledge. Thus, the guiding belief for this research was that, only through naturalistic enquiry, of which multiple realities and context dependence are part, and the use of congruent research methods that focus on knowledge as interpretive, could the wholeness and essence of nursing in relation to advanced practice be understood. The intention of this study was not to reduce advanced practice and the advanced practitioner to their component parts, but to attempt to describe them in their wholeness. Furthermore, since the naturalist has little interest in the generalizability of findings (Lincoln and Guba, 1985), the need to relate findings to a theoretical model was rejected. As Field and Morse (1996) state: 'the qualitative strength of validity [is lost] by "forcing" reality to fit the framework.'

Working within the naturalistic paradigm, it is necessary to obtain rich and freely given data, rather than responses directed along predetermined channels. Naturalistic enquiry methods for data collection from informants are given as interview (guided or open-ended), open-ended questionnaires, or participant observation (Field and Morse, 1996).

A focused interview method was used for this research. It was selected in preference to the questionnaire method primarily because it was felt that, to remain true to the guiding paradigm, it was necessary to obtain a richness of freely given data. The flexibility of the interview method is more likely to achieve this than a written questionnaire, which tends to generate superficial rather than in-depth material. A 'focused' interview was preferred over a standardized interview to enable informants the freedom to explore fully the issues that they felt were relevant. The diversity of informants' personal experience and knowledge precluded the use of a rigid format.

In order to focus the interviews, a number of questions were devised. These questions were not asked verbatim, nor were they presented in any particular order:

1. Tell me what advanced practice means to you.
2. How does a nurse become an advanced practitioner?
3. Do all nurses have the potential to become an advanced practitioner?
4. How did you get to the stage of advanced practitioner?
5. What do advanced practitioners do that is different from other nurses?
6. How would you recognize an advanced practitioner?
7. Where should advanced practitioners spend most of their time?

The interview questions were intentionally vague and non-directive. Using a focused approach allows the interviewer the flexibility to phrase questions in any way that elicits the same meaning, thus 'acknowledging that not all words have the same meaning to all informants' (Treece and Treece, 1986). Reliability and validity depend upon the ability of the interviewer to convey equivalence of meaning (Denzin, 1989).

In the context of this research study, the aim was to facilitate an interview



that enabled informants to articulate the meaning of advanced practice and advanced practitioner in such a way that I too was able to understand their meaning: what Mishler (1986) describes as the 'joint construction of meaning'.

The major strength of naturalistic research is its high validity because it employs methods of data collection and data analysis that remain true to the participants' perspective. One of the main questions to be asked of research is: does it measure what it purports to be measuring?; or, in the context of this study: does the focused interview achieve an appropriate response, that is, does it enable the informants to describe advanced practice/advanced practitioner? Predetermined questions enabled focusing of the interviews on the research topic, but the informal structure gave informants freedom to explore issues to whatever degree they felt necessary. In this way, questions were used as a 'springboard' for the informants to develop their ideas. As a result, a wide range of 'rich' data was collected.

### **Informant selection**

The informants were a group of experienced intensive care nurses, selected for the purpose of this study. The criteria for inclusion were on the basis that informants were judged by their peers to be expert in intensive care nursing, were based in clinical practice, and had an educational component (not necessarily formalized) to their role. The inclusion criteria were based on Williams and Webb's (1994) model; that is, that the expert informant: has a proven professional track record; has considerable clinical experience in the field (in excess of 5 years was specified for this study) and is currently clinically based; demonstrates continuing professional interest; and makes an active educational contribution.

Thus, on the basis of an objective, though arguably personal, opinion, the assumption was made that these 'clinical experts' could themselves be regarded as advanced practitioners. It is acknowledged that the selection of informants according to criteria was likely to develop a certain perspective related to the experts' standing; for example, if the same research study was conducted using non-experts, different data might have been obtained. The eight informants in this study were selected on the basis that they were representative of clinical experts in intensive care nursing. They came from a wide geographical distribution and only one nurse was selected from each intensive care unit.

Subsequent to Benner's (1984) application to nursing of the Dreyfus model of skill acquisition (H. L. Dreyfus and S. Dreyfus, unpublished observations), nursing attention has increasingly focused on the concept of clinical expert. Benner (1984) describes an expert as someone who 'no longer relies on an analytic principle... with an enormous background of experience' who has 'an intuitive grasp of each situation' and 'operates from a deep understanding of the total situation'. It is worth noting that Benner's work resulted from interviewing intensive care nurses about their practice. According to Benner, experts will have at least 5 years' experience in a particular clinical field (English, 1993).

The idea of using 'experts' for this research is contentious, since, as with the advanced practitioner, the issue of how an expert is defined is



unresolved and arbitrary (Goodman, 1987). McKenna (1994) warns that the title 'expert' has the potential to mislead, and that the title alone does not qualify expertise. Bond and Bond (1982) concluded that in nursing there were no clearly identifiable clinical experts.

There are no criteria available to measure 'expertness', and, although peer assessment of expertise has been criticized (English, 1993), this is on the basis that it does not fit with first paradigm scientific theory. Since naturalistic research rejects the need to conform to such theory, the need to preset rigid definitions of expertise is also rejected. As Darbyshire (1994) argues in response to the critique by English, it is precisely because of the qualitative nature of expertise that it cannot be measured.

Data analysis followed the process of content analysis described by Burnard (1991), and was undertaken after checking and correction of the interview transcripts by the informants. It is suggested that each word, sentence or phrase extracted from the transcripts should have 'stand alone' meaning (Lincoln and Guba, 1985). However, this is to some extent contested by Mishler (1986), who describes a 'narrative clause' as the fundamental unit of meaning, which cannot be 'relocated to any other point in the account without a change in its "semantic interpretation"'. On this basis, 'narrative clauses' were extracted from the transcripts and coded accordingly. A detailed description of the procedure is outside the scope of this chapter, but is available elsewhere (Fulbrook, 1994).

## Findings

### Informants

Eight informants were interviewed. All were registered nurses, having qualified between 9 and 23 years previously. Their total sum of postregistration nursing experience amounted to 120 years. All were very experienced intensive care nurses employed in recognized roles in intensive care units, and their length of experience in the specialty of intensive care nursing ranged from 7 to 17 years, and totalled 99 years. Five of the informants had the job title of Clinical Nurse Specialist, the other three were titled Course Teacher, Lecturer-Practitioner, and Clinical Nurse Manager. Seven of the informants had undertaken English National Board Course 100 (intensive care nursing), four had completed a first degree, one of whom also had a masters degree. Two were currently studying for their masters degree, and one for a doctorate. Two were clinically based in the London area, two in the South, three in the Midlands, and one in the North.

### Themes

From a total of 110 categories, 10 themes were generated: knowledge and education; getting there; what advanced practice is; core elements; constraints; based in clinical practice; roles; role attributes; personal qualities; and recognition. These themes were further categorized under three domains: achieving advanced practice; advanced practice; and advanced practitioner. The second domain of advanced practice comprised



the themes: what advanced practice is; core elements; and constraints. This section will present the findings under these headings.

In order to remain credible to the informants, the findings are illustrated by the informants' own words (LeCompte and Goetz, 1982). Furthermore, it is of critical importance that sufficient primary material is included to support my interpretation of the data and subsequent conclusions (Field and Morse, 1985). Therefore, my contribution to the findings at this stage will be narrative rather than interpretive.

## Advanced practice

### What advanced practice is

It was apparent from all the informants that advanced practice is very difficult to describe because it is so complex. Some informants could only describe advanced practice by considering what an advanced practitioner does: 'It's amazing how much you take for granted that you understand until you are asked to explore it... and I think it is much harder to actually explain.'

As the interviews progressed, informants had more time to reflect on the nature of advanced practice and were able to make their thoughts more explicit. One of the key issues that emerged on this theme was that advanced practitioners are expert clinical practitioners and therefore they deliver expert clinical care. The excellence of the care that they give is not measured in relation to their ability to perform tasks, but in their ability to assimilate a wide range of knowledge and understanding which they apply to their practice: 'It's a standard of practice that is informed by above average knowledge and insight.'

The informants were suggesting that, because advanced practitioners are able to function in this way, they operate at a higher level than non-advanced practitioners. Advanced practitioners are able to assimilate a multitude of information, which they process in relation to their expert knowledge. Thus, when they care for patients, what they do is determined by many factors. This informed approach to nursing care seems to describe advanced practice: 'Having a deeper understanding of what you are doing and why.'

Informants also argued that, because advanced practitioners are able to take on board all aspects of the patient and utilize a range of knowledge and expertise in their practice, they deliver more holistic care. Although clinical competence was considered to be extremely important in maintaining an advanced practitioner's credibility, the value assigned to the performance of tasks was minimized: 'Advanced practice is not about being competent at tasks. It's about looking at nursing as a whole.'

Another area that, according to the informants, defines advanced practice, is the ability of advanced practitioners to operate not just autonomously but outside of 'rules'. It was suggested that part of advanced practice is the ability to respond to each situation individually, guided by instinct and experience. The advanced practitioner would not need to refer to rules or guidelines to determine what they do, and is quite happy to break



rules if they feel it is in the interests of the patient. Some informants referred to the use of intuition. One informant described heurism: 'Sometimes acting on your instincts but knowing that it's got a solid foundation to it.' This was developed by another of the informants:

One uses heuristic devices which may be the same as other people use but you use them for a purpose, knowing what their limitations are. So, they may be guiding – I wouldn't say rules – rules of thumb if you like, indicators you have perfected over a period of time and that you know have served you well.

Advanced practice is clearly a very complex concept, which requires a range of applied expertise. It is reasonable to suggest that most of this expertise has been gained through education and experience. However, there is a somewhat nebulous, intangible aspect of advanced practice, which is much more difficult to define. This area could be described as instinct or intuition. It is about the ability to act uniquely according to the complexities of each unique situation in a way that feels right: 'It does have a scientific base I'm sure, it's just that we can't articulate what it is.'

One aspect of advanced practice on which all informants agreed was that its focus is nursing. What they seemed to be saying was that advanced practice is really what nursing is. Advanced practice is nursing in its fullest sense: 'Nursing in more of its purest form.'

Advanced practice was also seen as an ideal, a goal to be achieved. As such, advanced practice should be considered as a continuum, a dynamic process: 'All connected to striving towards this ideal thing.'

Advanced practice was considered with respect to its outcomes. Because its focus is nursing, its outcomes are seen in patients. The aim of advanced practice is to achieve excellence through improving the standard and quality of nursing care. This may be achieved either directly through the care that advanced practitioners deliver, or indirectly through the way that they help to develop both the practice environment and their colleagues: 'It's important that if one is identified as an advanced practitioner then that person is used to advance practice in the area in which they are.'

Advanced practice, therefore, is more than nursing patients, more than 'hands on' care. It is about the advancement of nursing generally.

### Core elements

This section of the findings focuses on the core elements of advanced practice, and the transferability of advanced practice skills to a different area of clinical practice. Most informants felt that there are core aspects of advanced practice, which are transferable. These core elements might be described as 'core nursing'. 'The principles of nursing are the same wherever you go, and the principles of advanced practice must be the same.'

However, it was felt that advanced practice relates to a specialist field of practice, and, although the ideal or principles of advanced practice might be the same wherever one practises, the actual practice itself is different. Therefore, an advanced practitioner in mental health nursing who moved to work in an intensive care unit would not be an advanced practitioner in intensive care nursing. There would be some areas of advanced practice that would be immediately transferable, such as research, education, personal



knowledge and communication skills, and the ability to integrate a wide range of knowledge and experience into practice would also be there. What would be missing is specialist knowledge. Since clinical expertise requires specialist knowledge (however gained), informants generally felt that advanced practice as a whole was not transferable. Although it was felt that there are core elements of advanced practice that are transferable to a different clinical area, advanced practitioners might not be able to use them straight away. It would take time for advanced practitioners to gain the necessary experience and specialist knowledge base before they could practise effectively at an advanced level, utilizing their full range of expertise:

I don't think that you could be described as an advanced practitioner in a practice area that you are new to, although you may have skills that are more advanced than [other] practitioners that are working in that field.

How quickly an advanced practitioner is able to function at an advanced level in a new area depends on how quickly they are able to gain the appropriate specialist knowledge and familiarize themselves with the new environment. The more different the environment to the advanced practitioner's previous area of practice, the longer it will take:

I may have advanced practice skills but I may not be very competent at using those until I was more familiar and experienced with the context. So, potentially those could be transferable, but it would have to be after a period of refamiliarizing myself with the context and getting to know that...and that might take a long time depending on what the context was.

Familiarization with the practice context is also important for advanced practitioners' practical competence and thus their confidence. It was said that the environment itself had an impact upon the advanced practitioner's level of performance. However, it was felt that an advanced practitioner who moves to a different clinical area would achieve advanced practice more quickly than a non-advanced practitioner.

In summary, the principles of advanced practice were considered to be the same for any field of clinical nursing practice. The core elements of advanced practice are to do with nursing generally, and include areas of knowledge such as research and education. Some specialist knowledge is also transferable, depending on the field of practice. The highly developed abilities of advanced practitioners in such areas as the assimilation and application of knowledge and experience would still be there, although the lack of knowledge and familiarity with a new and unfamiliar context may limit their ability to practise at an advanced level. Because advanced practitioners have a core of skills and abilities, they can adapt more quickly to a new environment and will function at an advanced level more quickly than someone who has never achieved advanced practice.

### **Constraints**

On the whole, advanced practice was seen as clinically based nursing practice, with the primary function of the advanced practitioner being the delivery of advanced nursing practice, that is, a clinical expert. Several



subroles were also identified: change agent, consultant, educator, and researcher. Discussion of these subroles is outside the scope of this chapter; however, the issue of whether a formal management role should be part of the advanced practitioner's remit was raised.

Informants generally felt that advanced practitioners should not be managers, but that they should have a role in influencing and contributing to management decisions. It was apparent that if advanced practitioners were given too much management responsibility it would dilute their ability to perform effectively as clinical experts. Some informants felt that the management structure did not always support advanced practice, particularly when there were financial implications. It was also suggested that if advanced practitioners were 'managers' there might be a conflict of interests, which would limit the ability to pursue ideal practice: 'In this current climate the management role may overtake their advanced practice role.'

The advanced practitioner's role in relation to management was seen ideally as one of reciprocity, that is, mutually beneficial in the interests of patients. This sort of relationship depended upon the management structure sharing the values and beliefs of the advanced practitioner. There was some scepticism about whether managers placed as much value on advanced practice as they should.

Other identified constraints on advanced practice were time and finance. One informant felt that peers could sometimes block the efforts of advanced practitioners: 'Sometimes that commitment is stifled due to peer pressure.'

The lack of a recognized career structure for advanced practitioners was also lamented, the suggestion being that there was no external incentive for nurses to become advanced practitioners. Clearly, the main perceived constraint is with regard to the management structure. If advanced practitioners take on a management role, it could severely limit their advanced practice. Similarly, if the advanced practitioner's role is not valued by the organization, then their ability to practise effectively might be restricted.

### Summary

Advanced practice is a complex concept, which is very difficult to describe. It is an ideal and its focus is nursing. The outcome of advanced practice is quality patient care, which is achieved both directly (through direct patient care) and indirectly (through development of colleagues and the practice environment). Advanced practice is expert clinical practice, which is at a higher level than that delivered by non-advanced practitioners. It is achieved through the assimilation of the context of practice with knowledge and experience, which is then applied to clinical practice. Competent clinical performance to a high standard is a hallmark of advanced practice, which is necessary for advanced practitioners' credibility. However, advanced practitioners minimize the importance of the ability to perform tasks.

Advanced practitioners practise holistically and are able to utilize their experience and self-knowledge in their practice in a way that might be described as *developed* (rather than *inherent*) intuition. Advanced practice is also about the ability to practise outside of rules that govern non-advanced



practitioners.

Advanced practice relates to a defined field of clinical practice, but its principles are the same wherever one practises. There is a core of advanced practice, which might be described as nursing and which is transferable across all areas of clinical practice. Because advanced practice relates to a specialist area, specialist knowledge and experience is also necessary. Therefore, an advanced practitioner who moves to a different clinical area would not be an advanced practitioner straight away.

## Discussion

The informants in this study generally found the concept of advanced practice very difficult to explain. This was probably due to the complexity of what they each perceived advanced practice to be. Similarly, in defence of the phenomenological nature of expertise, Darbyshire (1994) asserts: 'It is simply not possible to explicate a complex human experience such as expert nursing in formal, representational propositions which will predict or identify the "criteria" of expertise.'

Each informant inevitably had a different perspective of advanced practice, although there were many areas of consensus. Advanced practice was primarily cited as being expert clinical care, the expertise having been gained from experience, formal education and a highly developed sense of self-awareness. Because the focus of advanced practice is clinical practice and patient care, it is nursing orientated. One informant even described it as 'pure' nursing. As such, advanced practice was regarded as an ideal.

It was stated that advanced practitioners practise at a higher level than other nurses. What characterizes advanced practice is the way that advanced practitioners apply a wide range of knowledge and a deep understanding of nursing in their practice. In addition to such application is their ability to assimilate information pertaining to the context of each situation they encounter. They tend not to react to single stimuli and are more likely to weigh up the whole situation before deciding what to do. Their knowledge and experience gives them heightened analytical ability and foresight, which enables them to predict the consequences of their decision making. Because advanced practitioners have a wealth of experience to draw upon, they utilize experiential knowledge in their everyday practice. This might sometimes take the form of intuition or heurism. Advanced practice is therefore the result of a complex composite of knowledge and experience applied in a unique way according to each situation and through the medium of the self of the advanced practitioner.

The concept of advanced practice as expressed in this study, particularly because of its central theme of clinical expertise, has many similarities to Benner's (1984) expert. It is also relevant because Benner's work was based on a study of intensive care nurses. Benner characterizes an expert as being an 'expert performer' who 'no longer relies on analytic principle,' has 'an enormous background of experience... an intuitive grasp of each situation' and operates 'from a deep understanding of the total situation' (Benner, 1984). Similar views were expressed by the informants. However, one area where the informants would seem to disagree with Benner is regarding the



use of analytical principles. Although intuition and heurism were considered part of advanced practice, informants did not reject analytical ability. In fact, on the contrary, it was frequently mentioned as an important factor that was necessary for advanced practice. In Benner's statement above, she at first appears to reject analytical ability. However, on further reading, she explains that 'highly skilled analytic ability is necessary for those situations with which the nurse has had no previous experience' (Benner, 1984). The informants in this study did not specify how analytical ability was used. They simply stated that it was necessary.

The theme of expert or expertise arose on many occasions in this research, but was most commonly linked with knowledge from clinical experience rather than with knowledge from formal education. This is somewhat in contrast with the American models of advanced practice, which tend to place a higher value on theoretical knowledge. Harper (1985), however, is an American who believes advanced practitioners to be primarily clinical experts and states that 'clinical expertise is developed through the integration of theoretical knowledge and highly refined practice skills in expert nursing situations'.

As described above, advanced practice was seen as multidimensional, as a complex composite of different types of knowledge applied in practice. As such, the model of advanced practice described by the informants is reflective of Carper's (1978) 'patterns of knowing'. Carper describes four patterns of knowledge in nursing: empirics, aesthetics, ethics, and personal knowledge, all of which are necessary for 'achieving mastery in a discipline' (Carper, 1978). It is possible to equate mastery with expertise in the context of advanced practice, since mastery is 'a human response...in which competency, control and dominion have been gained' (Younger, 1991). It is also useful to consider mastery in relation to art. An art can never be mastered, one can only get better, like a dancer or a painter. Similarly, if advanced nursing practice is to be regarded as an artistic process, then it too can never be mastered. One can only continually strive for improvement. As such, advanced practice is dynamic.

Carper (1978) suggests that all of her patterns of knowing are inter-related and states that nursing:

depends on the scientific knowledge of human behaviour...the esthetic perception of significant human experiences, a personal understanding of the unique individuality of the self and the capacity to make choices...involving particular moral judgements (Carper, 1978).

Her ideas are similar to those expressed by the informants regarding the complexity of knowledge, which is integrated in order to achieve advanced practice. Although not explicitly mentioning aesthetic or ethical knowledge, they are certainly implied in many of their descriptions of how an advanced practitioner operates. Scientific (empiric) knowledge and personal knowledge were frequently referred to by informants.

Several informants referred to advanced practitioners' autonomy and their ability to operate beyond the rules and procedures that govern non-advanced practitioners. Because advanced practitioners are self-aware and conscious of their limitations, they know how far they can go. They are also confident in their ability to apply experiential knowledge to their practice.



Although they are usually able to articulate the basis for their actions with reference to theory, they may not always be able to explain what they do. However, they are confident to base their actions on previous similar experiences and intuitive feel. Benner (1984) described the confidence experts have for rule-breaking, and in a later study identified the way expert knowledge is shaped by learning from clinical experience (Benner et al., 1992).

The informants believed advanced practice to be located in a specialist field of clinical practice, and therefore an advanced practitioner could not transfer to a different clinical area and immediately continue to practise at an advanced level. In describing the transferability of advanced practice to different clinical areas, informants were able to identify a core of advanced practice. This core comprised mostly the type of knowledge possessed by advanced practitioners. Components of the core were: research, education, general knowledge, nursing knowledge and personal knowledge. Along with theoretical knowledge and self-knowledge, were abilities such as critiquing, analysing and synthesizing. These aspects were deemed transferable to a different area of clinical practice.

Because there is a transferable core, it was expected that advanced practitioners would not take long to gain the relevant specialist knowledge and experience in a new specialty to enable them again to practise at an advanced level. It was also stated that the more different the clinical area from the advanced practitioner's previous area, the longer it would take. For example, the transition from intensive care to coronary care advanced practice would not take very long when compared with a move to, for example, community nursing. Castledine (1991) also considers advanced practice to have a core, and suggests four core competencies of the advanced practitioner: communication, problem solving, academic, and practical nursing. In terms of competencies, his core elements are comparable with the findings in this study, since problem solving and communication skills are considered to be at the forefront of the advanced practitioner's role attributes (Fulbrook, 1994). However, in terms of a transferable core, problem solving, communication and practical nursing may be dependent upon the possession of relevant specialist knowledge and experience for successful advanced practice. The idea that advanced practice has a core is also supported by Kitzman (1989) in relation to the clinical nurse specialist. She states that in order to be able to deliver comprehensive holistic care, nurses engaged in advanced practice 'will need to draw upon core knowledge that will permit them to address the interaction of a patient's sub-systems'.

The most common factor described by the informants that might impair the advanced practitioner's ability to practise at an advanced level was considered to be the management structure. It was considered from two perspectives. Primarily, it was felt that formal management was not a component of advanced practice, and, if it was to become so, there would inevitably be role restrictions and moral conflicts. However, the advanced practitioner should liaise with management. It was felt that the advanced practitioner has a key role in relation to management, but that this role was one of liaison and collaboration. Secondly, it was felt that, to achieve advanced practice, the management structure and the advanced practitioner



should share common values, and there were some feelings expressed that organizational issues such as cost might take precedence.

Gournic (1989) discusses the clinical nurse specialist in a management position and highlights the potential danger of loss of the clinical practice component of the role. This concern is echoed by Castledine (1991), who states that it is imperative that line management positions for advanced practitioners 'do not impede their ability to function in the clinical setting'.

## Conclusions

There are several conclusions that can be drawn from this research study. However, their generalizability is limited, due to the fact that they represent the perspectives of intensive care nurses only, and it is possible that the findings would have been significantly different had a cross-section of advanced practitioners been interviewed. Furthermore, all the informants were senior intensive care nurses, and, as such, their perspective may not be congruent with that of junior nurses or non-advanced practitioners. There may be other areas regarding advanced practice that have yet to be explored. It is thus important to consider the findings and conclusions in this light.

Informants were selected for this research on the basis of their expertise and the assumption that they were all advanced practitioners. The possibility that some personal bias might have influenced the selection of informants is acknowledged.

Advanced practice is a complex concept, which is very difficult to articulate. It is practice based in a specific clinical area and therefore requires experience in that specialty before it can be achieved. As such, advanced practice is not immediately transferable when an advanced practitioner moves to a different field of clinical practice.

Although the transferability of advanced practice is questioned, the components of advanced practice have been identified. The main role of the advanced practitioner is that of expert clinical practitioner. This role is not transferable, since it is dependent on the acquisition of specialist knowledge and specialist expertise. However, there will be many areas of knowledge and expertise within the main role which *are* transferable. Thus, should an advanced practitioner transfer to a different specialty, it is expected that it would not take him or her very long to gain the relevant specialist knowledge and clinical expertise. On the basis of the findings of this study, one could not say: 'once an advanced practitioner always an advanced practitioner', and there is potential for advanced practitioners to move away from their specialty, never to regain advanced practice in a new field. Such a possibility might arise because the new specialty is too different, or as a result of internal motivational factors.

If 'advanced practitioner' was ever to become a registrable qualification, it would require regulation to ensure that all registered advanced practitioners are actually practising at an advanced level. This would be extremely difficult to ensure.

Titling for advanced practice needs careful consideration. The term 'clinical nurse specialist' is cumbersome and has obvious connotations with



the American model, which, although similar, is not congruent with the model of advanced practice proposed by the informants. The UKCC recommend that the term 'nurse practitioner' is no longer used since it has no identifiable role (Foundation of Nursing Studies, 1993). However, many such roles are currently being developed, and are often described in terms of advanced practice. Titles such as 'clinical expert' seem rather elitist and do not reflect adequately the practice element of advanced practice or the advanced level of knowledge that is necessary.

Advanced practice is very difficult to describe. Informants found it very challenging to articulate what their ideas of advanced practice were, and frequently had to revert to describing what the advanced practitioner does and how they do it to clarify what they meant. It is clear from this study that advanced practice arises from a background of clinical experience in a clinical specialty. Through a period of time, which is individual in nature and therefore cannot be specified, the advanced practitioner develops a comprehensive knowledge and a high degree of skill relating to a particular specialty. This experiential background develops an 'expert by experience', and gives the advanced practitioner clinical credibility with peers.

Clinical expertise alone is insufficient to earn the status of advanced practitioner; expert knowledge is also required. Clinical expertise and knowledge expertise are the foundations of advanced practice. However, according to the informants, the two together do not necessarily qualify practice. The advanced practitioner must also develop personally (Fulbrook, 1994). The development of communication skills, the use of reflection, and, in particular, a heightened self-awareness, is stressed. Thus advanced practice is a complex composite of knowledge and experience applied in a unique way according to each situation through the medium of the self.

Advanced practice was described by one informant as 'pure' nursing, and is congruent with the informants' shared belief in the value of nursing and their assertion that the focus of advanced practice is nursing. It would seem that the informants are describing advanced nursing as an art form in which many facets of nursing expertise are brought together. This advanced 'art form' was frequently described as being the 'higher level' at which advanced practitioners practise. This 'higher level' is characterized by several abilities that merit their advanced status and define them as clinical experts. Advanced practitioners have the ability to practise autonomously, and are not bound by the rules of practice that are there to govern others. Because they have a wealth of knowledge and experience, they are able to rationalize and justify their actions, and are not afraid to make decisions based on past experiences rather than acknowledged theory. When advanced practitioners make decisions, they do so having acknowledged all the factors that impinge on a particular situation and having weighed up the possible consequences of a variety of possible interventions. They tend not to react to single stimuli, and are more likely to reserve their judgement until they are in possession of all the facts that relate to the context. They are able to do this because they have a deeper understanding of the situation. Having established the full context of a situation, advanced practitioners are very good at prioritizing their interventions. This is enhanced by their ability to predict outcomes, which is further enhanced by their intuitive grasp of the



situation.

Advanced practitioners are articulate and skilled in presenting the nursing perspective in any situation. This ability is borne out of their wealth of nursing knowledge and experience, and the fact that the focus of their practice is, and always has been, nursing itself.

In conclusion, if the concept of advanced practice is to become a professional reality, much more work is required to make its components explicit. The danger is that the development of advanced practice might be driven more by government policies than by professional motivation. One concern in this respect is the reduction of junior doctors' hours (Department of Health, 1993) and the expectation that nurses take on tasks that were previously considered to be the doctor's domain. This is quite clearly not what the informants in this study consider to be advanced practice; it is not even role extension; it is simply the performance of additional tasks. It is a cynical, though plausible, view that professional advancements such as the UKCC's *Scope of Professional Practice* (UKCC, 1992), which offer professional support to the expansion of the nursing role, were allowed to advance by the Department of Health only because of the impending reduction of doctors' hours. As Christine Hancock states, the extension of the nursing role 'has been particularly evident since the reduction of junior doctors' hours' (Foundation of Nursing Studies, 1993).

On a more positive note, the development of advanced practice is a challenge for the profession. With the right framework, the role could be properly developed. The development of a recognized structure for advanced practice should enable expert clinical nurses to remain in the clinical area, doing what they do best: advancing practice in the interests of patients.

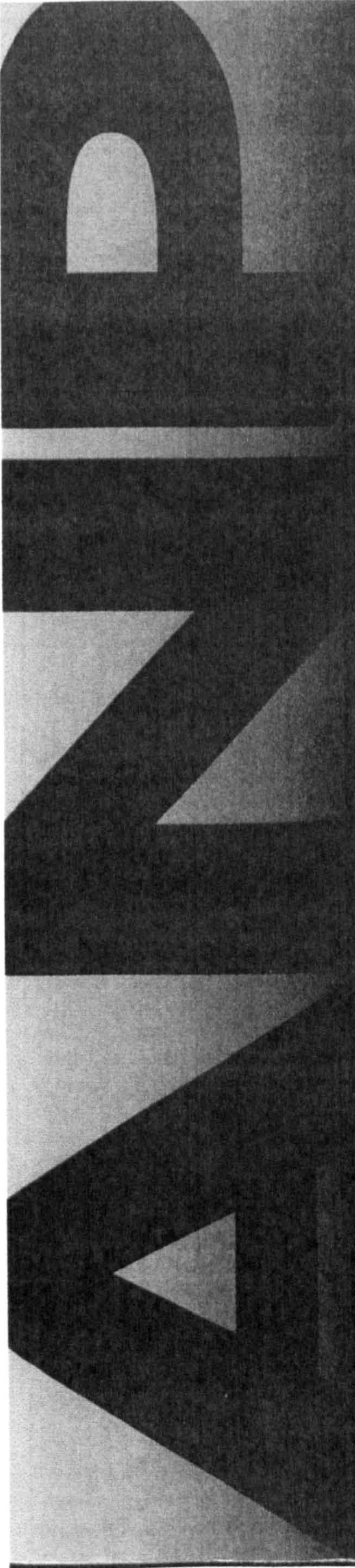
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# Advanced Nursing Practice

GARY ROLFE & PAUL FULBROOK





It is also necessary to explore the use of approaches to teaching and learning which link theory and practice, and provide specific knowledge, whilst encouraging the development of enquiry and lifelong learning skills. Problem based learning appears to be a useful strategy in this respect. It also emphasises the need for lecturers in nursing to be enabled to remain up to date in clinical practice and liaise closely with clinically based staff regarding the ENB 415 course.

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## EDITORIAL COMMENT

The publication 'Bridge to the Future' (DoH, 1997a) has focused much attention on the educational preparation of nurses caring for critically ill children. In tandem, the 'Framework' publication (DoH, 1997b) set new standards for the provision of paediatric critical care services. Central to both initiatives is the drive to ensure that all critically ill children, no matter where admitted, receive the best possible care from health care professionals qualified to care for children.

The 'Bridge' standards require that all critically ill children to be cared for by a children's nurse and at least supervised by a nurse with a critical care qualification. In designated 'Lead Centres' the standard is much higher, with the expectation that all critically ill children will be cared for by a nurse with a paediatric intensive care (PIC) qualification. Many PICUs were not able to provide this level of expertise, and a major educational programme was required to meet the needs of children's nurses working in intensive care not qualified with the paediatric intensive care course (ENB 415). In designated 'Major General' hospitals, where there was recognised (PIC) expertise, the problem was similar.

Response to the above standards has posed a challenge to managers, who must decide how to release and fund staff to undertake further qualifications. For, as soon as staff leave the clinical area, the service is at once depleted. At worst, in the short to medium term, some paediatric beds could close. Thus, the views of managers are critical in ensuring the success of educational programmes. Hewitt-Taylor's paper provides us with valuable insights into their needs and concerns. However, it is not surprising

to see identified that managers are less concerned with the processes of education than with the 'end product' i.e. a skilful, competent PIC nurse. The artful education provider, however, will work with managers and respond to their service needs.

The 'Bridge' publication recognised these issues, and challenged educationalists to develop innovative programmes of learning, with more flexible use of learning strategies. It is encouraging that many institutions are now responding to this call. Camsooksai's paper identifies some of the educational opportunities currently validated by the ENB. She challenges prevailing attitudes towards educational requirements to care for critically ill children, even raising the controversial question of whether or not ICU nurses need to have a paediatric qualification. Camsooksai, working in a general (predominantly adult) ICU probably sees the issues somewhat differently from Hewitt-Taylor's PICU managers. Nevertheless, the current reality is that critically ill children are, and will continue to be for quite some time, cared for in a variety of settings. Whilst the standards set out in the 'Bridge' are to be applauded, they are only achievable in the longer term. In the meantime, managers, educationalists and practitioners would do best to focus on the question: How can we currently provide the best possible care for the critically ill child?

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# Measuring the outcome of paediatric intensive care

Paul Fulbrook and David Foxcroft

This paper describes the background to the publication of the paediatric intensive care framework (NHS Executive 1997a) and sets out the case for outcome assessment of paediatric intensive care. Issues relating to mortality and morbidity assessment are discussed and several assessment tools are outlined. It is proposed that functional and psychological outcome assessments are important indicators of the quality of health care provision.

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## Introduction

In the long term, we need more information about the outcomes for children who are cared for in different clinical settings related to the severity of their illness when they enter paediatric intensive care. (NHS Executive 1996a)

Provision of paediatric intensive care services is a topical issue, with recent debate focusing on whether or not services should be provided in regional specialist units. Unfortunately, there is little empirical evidence to inform the organization of services, and what is available 'suggests that the clinical outcomes for children in adult units and in dedicated paediatric units are similar' (NHS Executive 1996b, p.4). The debate has been somewhat curtailed by the publication of two Department of Health (DoH) action papers: *A Framework for the Future* (NHS Executive 1997a) and *A Bridge to the Future* (NHS Executive 1997b). In the former publication, a new paediatric intensive care framework is set out in which the majority of services are provided in large regional paediatric intensive care units (PICUs) with a support network of district general hospitals providing lower-level care.

Within the context of the new framework, there is clearly a need for audit and research that evaluate the provision of paediatric intensive care

facilities: for example, in terms of 'outcome from units of different sizes and compositions' (NHS Executive 1996b, p.12). Moreover, research is needed which examines the outcomes of intensive care, not only in terms of mortality, but also 'measuring outcomes for children who survive intensive care but do not make a full recovery' (NHS Executive 1996b, p.12).

There are many factors that may influence a child's recovery in intensive care (Kidder 1989; Rothstein & Johnson 1982) and, since child health may be defined as the ability to function fully in developmentally appropriate activities (Pantell & Lewis 1987), outcome measures should evaluate both physical and psychological dimensions (Fiser 1992). The NHS Research and Development Executive has identified outcomes of paediatric intensive care as a priority area for research (NHS Executive 1996c).

Recent demands for evidence-based medicine have made imperative the need for systematic evaluation of outcome. Methods have been developed to assess the effectiveness of current and new interventions, which necessitate measurement of functional outcome. This relatively new area of research is expected to facilitate evidence-based choices in health care (Gemke et al 1996) and has been termed 'the third revolution in medical care' (Relman 1988).



## Background

The publication of the British Paediatric Association's report (BPA 1993) focused both government (Hansard 1993) and media attention on the provision of paediatric intensive care services in the UK. It also fuelled the debate in the medical and nursing press regarding the best way to provide a paediatric intensive care service (Woodward 1993; Bennett 1993; Murdoch & Bihari 1993a, 1993b; Shann 1993a, 1993b; Pearce et al 1993; Palmer et al 1994; Hadlington 1994).

The report concluded that paediatric intensive care in the UK was under-resourced. In particular, it criticized the lack of specifically designated (specialist) paediatric beds, the lack of appropriately qualified nursing and medical staff, and the fact that large numbers of critically ill children were being cared for in both general wards and adult intensive care units. The report condemned the situation, recommending urgent provision of specialist paediatric intensive care services at regional level.

However, an independent appraisal of the BPA report from the NHS Centre for Reviews and Dissemination (CRD) stated that the BPA report 'was not accompanied by a rigorous and systematic review of the relevant research literature' (NHS CRD 1994, p.2), pointing out that it did not make full use of research evidence. It also highlighted the lack of UK research about the best way to organize, staff and otherwise resource the care of critically ill children. This debate continued vigorously (Tibby et al 1996; Bennett 1997; Gemke 1997; Pearson et al 1997; Buss 1997; Tarnow-Mordi et al 1997; Tasker 1997; Stack et al 1997; Maybloom et al 1997) until the publication of the PICU 'framework' (NHS Executive 1997a, 1997b).

## Outcome of paediatric intensive care

The move to centralize paediatric intensive care services following publication of the 'framework', is based on the premise that critically ill children will receive better care than the previous system was able to provide. Implicit in this strategy is the assumption that outcome from paediatric intensive care will improve.

Whilst acute mortality rates are a standard 'benchmark' when looking at intensive care, they

are of limited use in relation to the quality outcome of care. A decade ago, the King's Fund identified the lack of intensive care outcome data (King's Fund 1989). Although the situation has improved, there is a dearth of UK research on the outcome of paediatric intensive care.

The transfer of level 2 and 3 care of critically ill children to dedicated PICUs (NHS Executive 1997a) poses an interesting research question: do critically ill children who are looked after in a specialist intensive care unit have different mortality and morbidity outcomes from those looked after in general intensive care units?

It is interesting to note that, although millions of pounds of NHS money have been directed towards supporting the new framework, there is little empirical evidence to answer the above question. If children are only cared for in centralized specialist units, it may no longer be possible even to address the question. There has been little else, other than rhetoric couched in professional opinion, to support the changes. Much of the available evidence is from the USA, Australia, and, more recently, the Netherlands, and cannot simply be applied to the NHS system. There are several reasons for this, such as geographic, demographic, and health care system variations.

If the 'either/or' question cannot be addressed in terms of outcome of paediatric intensive care, then at the very least research should focus on factors which affect quality of outcome. A major problem, however, is the almost infinite range of variables that have the potential to affect outcome. For example, the debate around the optimum size for a PICU has not been resolved. It is also very difficult to compare one unit with another since case-mix variation can be great. Some units admit predominantly post-operative patients, whereas others may have a predominantly trauma population. Others still may focus in specialist areas. Admission status (illness severity) may vary widely. Thus, it is important not only to compare *actual* outcome, but *predicted* outcome also. Standardized mortality ratios (SMRs) (a factor derived by dividing actual outcome by predicted outcome) are therefore of greater value (de Keizer et al 1997). Even this is not straightforward, since pre-ICU intervention may affect the admission status (lead-time bias) affecting calculation of outcome prediction (Dragsted et al 1989; Castella et al 1991) and SMRs (Tunnell et al 1998).



## **Mortality**

The standard measure of health care outcome is mortality status: ICU mortality, hospital discharge mortality or twelve months following discharge mortality. Though limited, this type of data is very important and acute mortality statistics are usually readily available. However, death in a PICU is a relatively rare occurrence; typically 5–15% (Beaufils et al 1987; Pollack et al 1993; Barry & Hocking 1995). There is some evidence from the USA which suggests that PICU mortality would be improved if all critically ill children were admitted to large tertiary centres (Pollack et al 1991) managed by dedicated paediatric intensivists (Pollack et al 1988a). However, crude statements of mortality are unsuitable for inter-institutional comparison because they are biased by case-mix variation (Gemke & Bonsel 1995). It is also considered unethical to conduct randomized controlled trials to enable comparison between units (Gemke et al 1994)

## **Morbidity**

There is 'more to life than measuring death' and relative ignorance exists regarding possible reductions of morbidity using many of the routine therapies employed in the ICU ... That the majority of ICU patients in the UK are returned back to their referring speciality early in recovery means that the associated problems of convalescence have not been adequately identified, or related to the events of the illness. (Griffiths 1992, p.134)

The quality of paediatric intensive care survivors' outcome is rarely addressed. The physical and mental health of children following a critical illness and intensive care should be a primary concern. Mortality statistics alone are not sufficiently sensitive to detect many important problems with health, and indices of morbidity are important adjuncts (Schroeder 1987; Fiser 1992). In a long-term study of 976 children admitted to an Australian PICU, of 974 who were followed up at between 30–36 months, only 42% were 'normal' (Butt et al 1990).

## **Psychological distress**

Adults and children react to life-threatening stressors with various forms of distress. Research

into psychological problems occurring after intensive care for critically ill adults has found that anxiety, depression, hallucinations, sleep disorders and confusion are all relatively common (Goldman & Kimball 1987; Bardellini et al 1992). Little research has measured longer-term psychological distress, but one small study, which looked at longer-term distress in adults, reported patients experiencing nightmares and showing symptoms of anxiety after discharge home (Jones et al 1994).

Children are exposed to an array of psychological stressors in intensive care (Palmer 1996; Bood 1996) but do not have the same intellectual and emotional coping responses that adults use to minimize stress (Betz 1982). Bonn's (1994) review of the literature concluded that a significant proportion of children suffer emotional and behavioural disturbances following hospitalization, which are exacerbated by prolonged or repeated admissions.

Post-traumatic stress disorder (PTSD) in children is classified as an anxiety disorder (American Psychiatric Association 1994) and is characterized by three major groups of symptoms: distressful recurring recollections of the traumatic event, avoidance of stimuli associated with the trauma, and a range of signs of increased physiological arousal (Yule 1994).

A variety of measures have been developed to measure psychological distress and post-traumatic stress disorder in children, such as the Pediatric Symptom Checklist (Jellinek & Murphy 1990) and the Children's PTSD Reaction Index (Frederick & Pynoos 1988).

## **Functional outcome**

There are many research assessment tools available which could be used to measure functional outcome and quality-of-life factors in adults after intensive care (Griffiths 1992) but far fewer have been developed for children. Accurate outcome measurement in children is made difficult by the need to design tools that cater for the whole range of cognitive and developmental ability. Thus many tools rely on maternal judgment.

Outcome data may be collected using questionnaires or interviews conducted with the mother of the child (or father if the mother is not available) to assess maternal (paternal)



perceptions of the child's physical and psychological health. This is a conventional method of assessing child attributes and mothers are still the primary care-givers in many families (Eiser 1995). Although maternal perceptions may provide a less objective assessment of child health, they may be preferable in this context, because of the wide age range of children admitted to intensive care.

Age of children is an important factor since it influences their vulnerability to stress both during and after hospitalization (Bonn 1994). The age distribution of paediatric intensive care admissions to general units in the UK has been surveyed: 46% aged 0-4; 19% aged 5-9; 20% aged 10-14; and 15% aged 15-16 (Fulbrook et al 1996). In PICUs, approximately 62% of admissions are in the 0-4 age range (BPA 1993, p. 29).

A number of researchers have developed tools which can be used to assess physical disability following serious or critical illness in children. For example: Pediatric Evaluation of Disability Inventory (Feldman et al 1990); Klein-Bell Activities of Daily Living Schedule for Children (Law & Usher 1988); Functional Independence Measure for Children (weeFIM) (Msall et al 1993).

Fiser (1992) has developed a tool specifically for the measurement of outcome from paediatric intensive care, which quantifies overall functional morbidity and cognitive impairment. However, her scales have been criticized for their imprecision and concerns about inter-rater reliability (Gemke et al 1993). Stein and Jessop (1990) developed the Functional Status II-R instrument, based on an adult health status measure: the Sickness Impact Profile (Bergner et al 1981). The tool measures two factors: general health and age-specific function, and has been shown to be reliable and valid for assessing children aged 0-16 years. More recent is the Health Utilities Index II, developed by Torrance et al (1996). Using mobility, self-care, sensation, cognition, emotion and pain as its six core dimensions, it has been shown to be reliable and valid for use in paediatric intensive care populations (de Keizer et al 1997).

### **Within intensive care factors**

The greatest cost incurred in any intensive care unit is nursing staff. Staffing of intensive care units where children are cared for is a professionally emotive issue, particularly for Registered Sick

Children's Nurses (RSCNs) (Knox 1994; Nethercott 1994). It should be noted, however, that no research has specifically addressed the impact of RSCN-staffed ICUs (versus non-RSCN staffed ICUs) on the outcome of paediatric intensive care. The DoH (NHS Executive 1997b) recommend that in regional PICUs (lead centres) all nursing staff should hold an RSCN qualification and the care of all children should at least be supervised by nursing staff with a paediatric intensive care qualification. The implementation of these measures has major resource implications.

The need to gather evidence to inform staffing decisions is particularly relevant in the light of one small study (Barry et al 1994), in which an analysis of mortality in paediatric patients admitted to a general (predominantly adult) intensive care unit over one year found that outcome was comparable to that of a major regional centre (McAloon et al 1991). Of particular note is the fact that the general unit had no RSCN-qualified staff. In the BPA report, mortality outcome from adult ICU was similar to that of PICU (BPA 1993, p. 29).

It is important to collect data on the status of children on admission to ICU so that illness severity and case-mix variation can be adjusted to enable comparison between units (Intensive Care National Audit and Research Centre 1995).

One means of assessing patient variation is the Therapeutic Intervention Scoring System (TISS) (Cullen et al 1974), which has been widely used with adults as a classification system to quantify ICU therapy. However, TISS has been criticized because there are so many versions. TISS has been adapted for use with a paediatric population (Yeh et al 1982).

Perhaps the best known paediatric illness severity score is the Paediatric Risk of Mortality Index (PRISM), developed from the Physiologic Stability Index (Yeh et al 1984) by Pollack et al (1988b). The score originally consisted of 14 routinely measured physiological variables, assessed according to age, and was shown to be accurate when used to predict outcome. It has recently been updated and now consists of 17 variables, and greater accuracy of mortality risk assessment is claimed (Pollack et al 1996). However, data are collected within the first 24 hours of admission to ICU, based on the worst deviation of each variable measured, and this has led to criticisms concerning the validity of outcome prediction:



A child admitted to a good ICU who rapidly recovers will have a score that suggests mild illness, but the same child who is mismanaged in a bad ICU will have a score that suggests severe illness – the bad unit's high mortality rate will be incorrectly attributed to it having sicker patients than the good unit. (Shann 1996, p.139).

In response to criticisms of PRISM, Shann et al (1997) have developed the Paediatric Index of Mortality (PIM). Using data from 5695 children collected over an eight-year period in seven Australian and one UK PICUs, a logistic regression model was developed which is able to predict outcome with reasonable accuracy. PIM uses only eight variables collected within the first hour of admission to intensive care.

Since the psychological status of children during an ICU admission may affect their psychological outcome, it makes sense to assess levels of psychological distress. Furthermore, perceived distress influences sedative administration, which has many reported withdrawal effects. Distress is an open concept, which is very difficult to generalize. However, a tool has been developed which is gaining widespread acceptance in PICUs: the COMFORT Scale (Ambuel et al 1992). This scale was developed from literature review and survey work involving experienced PIC nurses. It is used to assess psychological distress, based on eight dimensions that combine quantitative and qualitative assessments.

### **After intensive care factors**

Although this paper has concentrated on factors related to ICUs which affect outcome, it should also be remembered that there are other post-ICU factors which affect both morbidity and mortality. It should not be assumed that changes in status at follow-up are only as a result of treatment in an ICU. For example, the quality and availability of follow-up care by general practitioners, community nurses, health visitors, physiotherapists, and out-patient clinics will influence outcome. There are a host of other factors that merit consideration, such as family/parent status and parental coping ability. The list is long, but does need to be addressed in the longer term.

### **Conclusions**

This paper has highlighted the need for research into outcomes of paediatric intensive care. This is particularly important in relation to evaluation of the new framework (NHS Executive 1997a). There is insufficient evidence currently available in the UK to inform health care decisions. In order to achieve the 'third revolution' (Relman 1988), outcome data should be gathered. However, outcome assessment is only one part of the classic triad of structure, process and outcome, which defines quality of care (Lohr 1988).

There are many factors which may influence the outcome of paediatric intensive care and it would not be possible to record every variable which might exert an influence. However, in order to obtain meaningful data, it is suggested that patient status should be measured at three distinct points: admission to ICU, within ICU, and after ICU.

Admission status should include assessment of pre-morbid factors, such as chronic health status. Also relevant is the quality of pre-ICU intervention, which may affect morbidity and mortality (McQuillan et al 1998). As well as illness severity, within-ICU assessment should include both functional and psychological status. Also important to evaluate is the impact of the prime carers, i.e. medical and nursing staff. Mortality statistics alone provide insufficient information to inform health care; morbidity outcome assessment is therefore vital. Assessment after intensive care should include both functional and psychological status and should attempt to address community factors that may influence recovery.

There are a variety of research instruments available that can be used to assess paediatric status both within and after intensive care. However, it is always going to be difficult to devise tools that are reliable and valid for use with children of all ages and developmental ability (La Greca 1994). In verbal children, self-report measures may be unreliable, particularly when pain is assessed (Beyer et al 1990; Manne et al 1992). For very young children, and those with severe cognitive impairment, tools rely on assessment by parents or health care professionals. When qualitative measures are



employed, there is always an element of subjectivity and inter-rater reliability must be ensured.

The degree to which outcome status can be attributed to process factors is problematic and great care should be taken when links are suggested. Single causative factors are unlikely to be identified and a factor analytic approach may reveal cumulative influences. There is a need for more research work which links process to outcome.

In summary, to strengthen understanding of the process and outcome of paediatric intensive care, work is required in four areas: evidence of process and outcome linkages; relationships between technology and quality; reliability and validity of outcome measures; and continued development of health status measures (Lohr 1988).

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# On the receiving end: experiences of being a relative in critical care

## Part 1

*Paul Fulbrook, Douglas Allan, Sean Carroll, Deborah Dawson*

### Summary

- This is the first of a series of three papers, presenting in her own words the experiences of Jane, an intensive care staff nurse, when her husband was admitted to her own intensive care unit
- In part one, Jane describes her husband's admission to the accident and emergency department, the intensive care unit and subsequent transfer to a regional neurological unit
- Jane gives a powerful and often very moving account of her experiences as a relative on the receiving end of critical care
- There are many aspects of her husband's nursing and medical care, with which Jane remains dissatisfied
- Some of these issues are discussed through professional commentaries, which are offered in the latter part of the paper

*Key words:* Critical care, Families, Reflection, Relatives, Sub-arachnoid haemorrhage

### INTRODUCTION

This is the story of Steve who was admitted to intensive care. It is told through the experiences of his wife Jane, an intensive care staff nurse. She expressed a therapeutic need to tell her story and felt that it was an essential part of her grieving and healing process. Her main wish is that others may learn from her experiences. The story was told through an unstructured, informal interview. For reasons of confidentiality, all names have been changed.

Jane's story has neither been enhanced nor diluted. It is told in her own words. My role as interviewer/writer (PF) has been to act as a medium through which Jane could recount her experiences. The only editing I have done has been either for grammatical presentation or chronological ordering. I have made no attempt to analyse, or indeed judge, anything she had to say. That task is for the individual reader.

Jane presents a powerful, often very moving account of what it was like to be a relative in critical care. It is fair to say that there are many aspects of the nursing and medical care that her husband received which Jane remains

unhappy about. However, I believe we can learn much by listening to what she has to say. This is the first of a series of three papers in which Jane reflects on her experiences.

In part 1, Jane describes her experiences when Steve was admitted to the intensive care unit where she herself worked, and his subsequent transfer to a neurological unit. In part 2, she continues her story, describing the care of her husband in the neurological high dependency and intensive care units. Finally, in part 3 she reflects on some of her experiences.

In order that we make sense of what Jane has to say, and also so that we might use her experiences as a vehicle for developing our own practice, I have invited some professional colleagues to give a personal commentary on some of the issues, which they find particularly important. These are given at the end of each paper.

### BACKGROUND

*Jane:* Basically Steve had been unwell for a couple of days. He had been better on the Sunday and then his headache had come back again, so he had gone to bed early. Literally, about five minutes after I got into bed he just shouted out and said, "This is the worst the pain has ever been, put the light on!". By the time I put the light on his eyes were rolling. I thought at first he was joking, and then I realised that he had lost consciousness ... and then he started to fit.

I called an ambulance. He was taken to hospital and CT scanned and was found to have had a sub-arachnoid haemorrhage.

Steve was admitted to the local district general hospital and then to the ICU where Jane worked as a staff nurse.

*Jane:* He was taken up to HDU but he continued to fit, so

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he was taken over to ICU, where he stayed for a couple of days until they had a bed at the regional neurological unit. During that time he didn't deteriorate but he didn't improve and he was conscious all the time.

He went to the regional neurological unit on the Tuesday but was never well enough to have an angiogram or surgery. While waiting for his vasospasm to settle down he developed hydrocephalus and deteriorated. On the Saturday they did a burr hole and he improved overnight, only to deteriorate again the next morning, and blow his pupils. He was intubated and ventilated. On the Monday they did brain stem tests but he took a breath so they had to wait another 24 hours. On the Tuesday he failed his brain stem tests and went for organ donation.

### Making the diagnosis

**PF:** Let me take you back to the first event that you described for me, which is when Steve called out and said that the pain was the worst it has been. How did you react then?

**Jane:** Until I put the light on, I just thought the pain was bad because he was somebody who always had headaches. I just put the light on, not thinking that he would be collapsed. When I turned the light on and looked at him he was rolling his eyes and had gone cross-eyed. I thought at first he was mucking about. Then he started to fit, and I was overwhelmed by a feeling of sheer panic. All I could think to do was to try to put him on his side because he was still breathing. For a minute I just didn't know what to do, but I knew he was breathing and a voice in my head kept saying, "Phone an ambulance, 'phone an ambulance. You can't do anything on your own".

I banged like crazy on the wall for my neighbours and ran downstairs and tried to 'phone for the ambulance. It was incredibly difficult because by then my mouth was so dry. I couldn't get the words out. I was so desperate for them to come really quickly, and ambulance control kept saying, "Slow down, start again". While I was on the 'phone there was this almighty thud and I knew he had fallen out of bed.

I went upstairs thinking that he was going to be dead. He wasn't, thank goodness. He was still breathing but he was still fitting and he was vomiting. I tried to push him into the middle of the bed but he was so heavy I couldn't do it. My neighbours came in. The ambulance seemed to be taking an absolute eternity. My neighbour went back to phone the ambulance again. When the ambulance crew arrived they got him downstairs into the ambulance.

**PF:** Did the ambulance really take an eternity or did it just seem like it?

**Jane:** It seemed like quite a long time but I suppose to get from the ambulance station to home it was a reasonable time. It just seemed like an eternity. Well, it was long enough for my neighbour to go back and 'phone, and for me to try to find a doctor's number in the directory. But I couldn't find it, I was in such a state. I just couldn't find it ... and he was being sick. I felt very stupid because I couldn't find a container for him to be sick in. I couldn't think sensibly where anything was.

**PF:** You realised at the time that you couldn't think straight?

**Jane:** Yes, I couldn't do anything. You know, in a medical situation, if I wasn't related to the person it would have been quite straightforward but because it was Steve ... I was so frightened he was going to die. I knew it was bad, but at the time I didn't realise it was a brain haemorrhage. I knew it was really bad. I 'phoned my mum and dad just to say, "Come down, it's bad and he's going to die". I knew he was going to die. I was just hoping that the ambulance would get there before he actually did. It was very frightening.

When they came I was getting in the way, but I was so desperate to do something. I tried to help lift him onto the stretcher, and tried to give them a bowl for him to be sick in. I knew I was getting in the way but I just had to feel that I was doing something. One of the ambulance men said, "Nurses are the worst because they try and help". And you know you're useless really, but I just felt that I had to be doing something.

**PF:** You said you hadn't realised that it was a haemorrhage, what was going through your mind - what did you think was happening?

**Jane:** I just knew it was bad, and I kept saying to the ambulance men, "What do you think it is? What do you think it is?". They put an airway into him and said he wasn't totally 'out of it' because he tried to stop them putting it in. When we were in the ambulance, I checked his pupils and they were reacting. On our way to casualty, they got me to write his details down - just to occupy my mind. I was desperately willing Steve to come round and to stop being sick.

It started to dawn on me that it was probably a brain haemorrhage by the time we got to casualty. Once I had started to calm down a little bit, I suppose. Once I knew that help was at hand really. When the ICU people arrived I asked them directly, "Do you think it's a brain haemorrhage?" and they said, "Yes, but we'll CT him".

**PF:** How do you feel about the way the ambulance crew treated you?

**Jane:** They were very good. They were quite light-hearted, which was probably the best thing. They didn't panic or anything like that. If they had, I would have been really worried. That would have made me even worse. I think the fact that they were light-hearted and calm just helped settle me a little bit, but it was still very frightening. They had to use the suction in the ambulance, and it was so strange because I'd never had to suction anybody I'd transferred in an ambulance. To see Steve being suctioned was horrible. But as best as they could they did try to put my mind at rest.

### In accident and emergency

**PF:** I know that there are many issues you want to raise about Steve's care, but for now I'd like to talk some more about what happened when Steve was admitted to casualty.



*Jane:* Straight away Steve was taken away from me to be examined. Because I had nobody, no relatives, no friends, or anyone with me ... my neighbour had to stay with the dog, and nobody else knew. I just went up to the receptionist, bawled my eyes out and said that I was staff. She was very good and let me go into the staff room.

I wanted to ring ICU but at first I couldn't even remember the number! While I was waiting for somebody to come down from ICU I didn't know what was happening with Steve. It seemed like an eternity waiting for information. I went out to try to find him but wasn't allowed to see him. I started looking around for him.

I went to the 'major' room and he wasn't in there. I thought at the time, "Oh, that's good". But I wasn't allowed in to see him and that was hard because as an ICU nurse you're allowed access everywhere.

*PF:* How did they explain that you couldn't see Steve?

*Jane:* Just what we say to relatives – you know – that they needed to examine him. Fortunately various nurses came down from ICU. They rang John, our ICU registrar. I finally got to see Steve before he went to CT. John was there with one of our ICU consultants; that was nice.

As it happens, the doctor who clerked Steve in casualty was Alan who is now on ICU. Afterwards, when I met him again I didn't remember him at all, and usually I never forget a face! But it was nice that they were all there. John took me to one side and said that if Steve had to be transferred he would do it himself – even if he didn't need ICU. That was quite reassuring; to know that he was being looked after.

When I went in to see Steve just before the CT scan he had regained consciousness. He was very frightened. He hated hospitals, so that was quite hard as well. But at least he could talk, most of the time then, quite coherently.

When they took him to CT scan it was really hard because normally I would go in there and watch the CT. I knew he was really restless as well. So, it would have been nice to have been sat with him. Jackie [one of Jane's ICU staff nurse colleagues] took me to have a cup of tea.

When we went back up to CT it was empty! So, I was thinking, "Why is it empty?". When we got back to casualty they were all standing there and they didn't say anything.

*PF:* Who do you mean?

*Jane:* John, Alan and Harry (the ICU consultant). I just looked at the trolley and Steve was completely 'flat'. All I could see was the ECG machine with a flat line on it. I thought he was dead! I pulled up the covers to see if his feet were still pink, and I said, "Is he dead?". They said, "No" – but the machine was showing a flat trace and they said, "Sorry, we should have turned that off". I've never thought about that before but that really frightened me. It was just a simple omission but, you know, I really thought that he was dead.

### Transfer to high dependency care

*Jane:* They transferred him to one of the medical high dependency beds. While he was being admitted I had to

wait in the staff room. That felt like an eternity. I was just walking out to see what they were doing – and you know, relatives who do that are the biggest pain in the neck, aren't they – when one of the nurses ran out asking for an anaesthetist. I thought he had arrested! I tried to run into the unit but they stopped me. As it happened, it was Steve. He hadn't arrested but was fitting badly.

They weren't happy for him to stay on HDU so they moved him to ICU, which was good for me because I knew that he was going to get the best possible care. If he did deteriorate I felt that he was in the right place.

### Waiting

*PF:* You said a couple of times that you were made to wait outside. Tell me more about how that felt.

*Jane:* It was very hard because it seemed like a long time. Although it probably wasn't a very long time, I know that it was quite a while. I drank a number of cups of coffee down in casualty and I spoke to quite a few people. It was just really hard because you don't know what's going on. "Why are they so long?", you ask yourself, "has something bad happened?". You just want to be there. I was thinking, "If he's going to die, I want to be with him. I don't want him to be on his own".

I knew that he hated hospitals, anything to do with them. I mean, he couldn't stand it when I came home from work and he could smell hospitals on me. I knew that he was really frightened, so I wanted to be with him. Of course I couldn't, and I knew that they were taking blood and that sort of thing, which he would have hated, so it was just really hard. It's not knowing.

*PF:* Did you try to insist on being present?

*Jane:* Oh no. I think it was because I knew them and I knew that they would let me in as soon as possible. It was much harder later on when he was transferred to the neurological unit. They'd say to wait 10 minutes and I'd go back in 10 minutes, and they'd say another 10 minutes whereas they didn't say that in my own unit. I just knew that I had to wait until they had finished, but it was a very long wait and you just imagine the worst, you know.

*PF:* How do you feel now, when you're at work and asking relatives to wait?

*Jane:* I'm very aware that for them it's very difficult to have to wait. So I try – even if I just let them in for a little while and then ask them to wait outside again – just so that they see and reassure themselves that their relative is still there. I think it is important to let them come in, no matter how short a time, just to put their minds at rest. Sometimes it is necessary to keep them waiting a long time but most times it's not. It's just that your imagination works overtime when you're sitting out there. You've got nothing to do apart from think about that person.

*PF:* While you were in the waiting room, when Steve was being admitted to the HDU, what was going through your mind?



*Jane:* Just fear. You know, I always knew in my heart that he was going to die. It was just a question of when it was going to be; how long he was going to last out. That was why I needed to go in there and see him. But even so, when the nurse came out and said, "I need an anaesthetist", it's still the worst feeling you can imagine. I did think he'd arrested. Although you half expect it, when it actually happens it is so frightening. I couldn't have done anything, but I had to be there. It was very, very frightening.

### Transfer to ICU

*PF:* You seemed relieved that he was transferred to ICU.

*Jane:* Well I just knew that if he deteriorated, if he needed intubating, everything was on hand there. Although I'm probably biased, the care that he got was brilliant. Perhaps he got a bit more attention because he was my husband, but it was excellent.

I was lucky in that I could choose who looked after him, so that was sort of specialist attention. It was people that he had met before, which I thought was important to him. At least he wasn't with strangers. He was put in a side room, which I wasn't expecting. It was a really nice gesture. They were so caring. I could go in whenever I wanted, and quite often when he was having some procedure done. He wanted me to be there anyway, so it was quite good that they let me do that.

The [ICU] consultant was excellent. He came to see Steve in the morning, and was very good with him. He then went through the CT scan with me. I hadn't been told much about the CT scan. By then I was a bit calmer and I wanted information. He went through the CT scan with me and mentioned the possibility of hydrocephalus developing.

I was told that Steve should be transferred to the regional neurological unit but that no bed was available. They rang quite regularly to see if there was a bed available and gave me the information without me having to ask for it.

Steve was well looked after – he was incontinent, and he was pulling at everything. You know, he really was the worst patient to look after. You couldn't take your eyes off him. He was trying my patience! But the nurses never showed that it was irritating them. I knew that he was well looked after. When I wasn't there he was getting the care he needed.

When one of the nurses thought to put the radio on, Steve said, "Oh good, that'll break the monotony". It was strange – I wouldn't have thought he would want to listen to music but he really enjoyed it. I think that was one good thing that happened; he could listen to his music and I knew that he was enjoying listening to it.

I felt that he was well looked after and that when I went home at night I could ring if I woke up in the night and they didn't mind. I didn't feel like that when he was on the neuro unit. That was partly because I knew that it was going to be bad every time, but partly because I didn't feel the nurses were very open.

*PF:* Tell me how Steve was when he was in ICU.

*Jane:* He was conscious. He was hypertensive but not really dangerously. He was on IV nimodipine, which although they say is no different to tablets, I do think having it IV helped. He was confused quite a lot of the time but sometimes he could have conversations. When the nurse put the radio on and he said, "Oh that's good, that'll break the monotony", it amazed me. He could remember words to songs, and even songs that came on the radio that we didn't listen to very often, he knew. He could recite things that he wouldn't normally know. It was funny how it affected him. Obviously he was using a part of his brain that he normally wouldn't use.

On the whole he wasn't too bad. He had a weakness down his right side, which Jerry [the senior ICU consultant] said was odd because his haemorrhage was on the right side. He was quite hopeful that it would resolve. I wondered whether it was [brain] swelling that was affecting him. It was as if his right leg didn't belong to him. When Jerry said, "Lift your leg up", he'd have to lift it up with his hands. Apart from that he wasn't too bad, and I think Jerry was quite hopeful really.

### Hope

*PF:* What about you, were you hopeful?

*Jane:* I just always knew he was going to die.

*PF:* Even then you felt that?

*Jane:* Yes, but I think that because people were quite hopeful, although I knew it at the back of my mind, I just carried on. When I look back now I think, "If I knew he was going to die, why didn't I stay with him all the time?". I didn't, and I don't know why. I found it very hard to stay there. I think now, "Why didn't I act differently?". I don't know what made me know he was going to die, I just always knew. I think that because people like Jerry were quite hopeful I almost didn't face it. Everybody was saying, "Yes, he can survive, don't be so pessimistic" and you know, all the way through when they were saying that, I was saying, "No, he's going to die".

### Being present

*PF:* Intensive care nurses often talk about the importance of giving relatives permission to leave the bedside. Did you feel any pressure to be present?

*Jane:* I used to feel sorry for patients whose relatives didn't visit for very long, especially when somebody was dying and they didn't stay with them. I thought that was awful, but having been through it myself I was exactly the same. I just couldn't stay there for very long. I think it was because I could see him suffering. He was a different person. Although sometimes he could talk to you – he was an intelligent man with a good job – to see him confused, incontinent and in pain, I found very hard to handle; very stressful.

When he was in my own unit it was easy to go back home for a bit but when he was transferred to the neuro unit it was such a long journey I had to stay there. I could never stay there very long, I just needed to get out. I want-



ed to stay with him but he wasn't really aware that I was there. He didn't seem bothered whether I was there or not.

On one occasion when they took a blood sample – which he really hated – he told me off afterwards. He said, "Why did you let them make me give blood?". That really hurt me. When they took blood from him the next time I thought, "I'm not going to stay because I don't want him to associate that with me". So I went away. When I came back the nurse said, "Oh, we were looking for you, he asked for you" and I thought, "Oh, God!". You know, it was a no win situation.

*PF:* You said that one of the reasons you didn't like being with him was because you didn't like to see him suffering. One thing that nurses often pride themselves on is that patients don't suffer ... but you felt that he was suffering?

*Jane:* Yes, especially when he was in the neuro unit he couldn't keep still. He was fidgeting the whole time and rubbing his head. Whenever I asked, "Does your head hurt?" the answer was always "Yes". If he'd had his quota of painkillers it was just horrible. It was so frustrating that I couldn't do anything else. As nurses we try so hard to make the patient comfortable. Yet, sometimes when I went to see him at the neuro unit he'd be in agony. I'd look at his drug chart (which if anybody had done, when I was looking after a patient, really used to annoy me); he was on DF118 injections and paracetamol. If he hadn't been given his injection, I'd ask why. "We must respect the patient's wishes – when I asked him if he wanted an injection, he said 'No'", was the standard reply.

Steve hated injections. If you put it like that to him he'd always say 'No! I spoke to Steve myself and said, "Look, the only way we can get rid of this pain is for you to have an injection, will you have one?". He said "Yes". Sometimes I just felt that Steve wasn't getting adequate nursing care.

*PF:* Tell me more about the neuro unit. Why was Steve transferred?

*Jane:* Steve hadn't been making any progress so the ICU consultants discussed his condition with the regional neuro consultant who felt that his only real chance of recovery was to have a cerebral angiogram and subsequent operation on the aneurysm.

### Transfer to the regional neurological unit

*Jane:* By the time he got to the neuro unit he was quite confused. He went there on the Tuesday afternoon and I don't think the journey did him much good.

I remember him saying when I went in to see him, "I feel battered". When they asked him, "Where are you?" before he was transferred, sometimes he'd say, "In Jane's hospital". Sometimes he'd say the name of the village where we lived but when we arrived at the neuro unit and they asked him, "Where are you?", he said, "In a brick". When they asked him again later, he thought he was in the BBC studios; he had been there as a child but not since.

*PF:* Did you go with him when he was transferred?

*Jane:* We followed the ambulance. It was really stressful because my mum was driving and she didn't know the way. I had to give her directions. I didn't want to keep telling her where to go. I just wanted the ambulance to get there without any problems. I couldn't concentrate on anything else. I remember feeling so stressed as we were going along. I just wanted it all sorted out. I wanted him to have the angiogram; to have the operation. I just wanted to get him there in one piece really.

*PF:* So at that point you were feeling positive about the transfer?

*Jane:* I was. I knew that his only chance of survival was to have the operation. So, although it was always in the back of my mind that he was going to die, I knew he had to have this operation.

*PF:* When you arrived at the neuro unit did you go with Steve?

*Jane:* No, we were shown to a recess in the corridor! A nurse came up to me later and said that he was 'settled' and they were just 'sorting him out'. We had to wait ages. I couldn't keep waiting – I had to go and have a look – which didn't go down very well! There was a very miserable house officer examining Steve. He clearly didn't want me there. He just wanted to examine Steve. He took ages because he kept stopping and going away to do other things. I felt he should have been there with Steve. He didn't want to give me any information either. He just said that the consultant would speak to us later that afternoon. When I saw him again later, he told me the consultant would see us in the evening.

We never saw the consultant at all that day. We did see a registrar. He came and spoke to us in the 'recess' – nowhere private! I was very direct and said to him, "What are Steve's chances?". "Right", he said, "well, he could live or he could die", which really wasn't much use to me! Yet when Steve's mum spoke to him later on, he said, "He could end up a cabbage".

When friends visited him the next night the registrar told them that Steve had had a re-bleed and it would be much worse the next time. He never said that to me.

They stopped his IV nimodipine and he was on IV fluids when he lost his venflon. He had to wait ages for a new one. I don't know whether it had any effect, but he went without fluid for a long time. I don't know whether it was the journey or the combination of a lot of things but he just wasn't so good then. I was quite worried when I left him that night.

[Part 2 of 'On the receiving end' will appear in the next issue of *Nursing in Critical Care*]

### PROFESSIONAL COMMENTARY

#### Pathology and symptoms

Douglas Allan explains the background to the symptoms that Steve experienced and Jane witnessed:



Haemorrhage into the subarachnoid space typically causes sudden, severe headache, often accompanied by vomiting. The patient may be alert and oriented or alternatively, there may be loss of consciousness, seizures and evidence of neurological deficits such as third-nerve palsy, hemiplegia or hemiparesis. Many of these symptoms are related to the effects of raised intracranial pressure (ICP) and reduction in cerebral perfusion pressure (CPP). ICP is the pressure exerted by the cerebrospinal fluid within the ventricles of the brain. Normal pressure is maintained at 0–15 mmHg and sustained rises in pressure will produce mild to severe neurological damage depending on the duration of time over which pressure is elevated and its level. CPP is the blood pressure gradient across the brain and the normal range in adults is 70–100 mmHg.

Causes of subarachnoid haemorrhage include an aneurysm in the wall of a cerebral blood vessel and arteriovenous malformations (AVM) but in some patients no cause is identified. Hypertension, although seen in some patients, is not always present but damage caused by arteriosclerotic changes is common. Most aneurysms form on the anterior part of the Circle of Willis and some patients have multiple aneurysms. The exact cause of aneurysm formation remains unknown and the current suggestion is that they are due to haemodynamically induced degenerative vascular disease. It is suggested that the intima, which is covered only by the adventitia, bulges from a local weakness. Haemodynamic stress causes vessel ballooning and rupture usually in later life. In some instances the condition may run in families and this is supported by research demonstrating an association between the presence of specific human leukocyte antigen alleles and their genetic role (Ryba *et al.*, 1992). Some bleeding can occur through the very thin aneurysmal wall and produce mild signs and symptoms of subarachnoid haemorrhage without rupture occurring.

When an aneurysm ruptures, blood, which is now under high pressure, is forced into the subarachnoid space at the base of the brain. Sometimes, depending on the location of the aneurysm, it ruptures into another part of the brain producing a haematoma. Fibrin, platelets, and fluid form a seal and the resulting clot can interfere with the flow of cerebrospinal fluid and result in hydrocephalus. Meningism results from the irritant effect of the blood, which triggers an inflammatory response contributing to the development of cerebral oedema, which will raise ICP even further.

The patient who survives the initial bleed may have residual headache and neck stiffness indicating meningism. Kernig's sign, extending the knee to stretch the nerve roots, thus causing the patient some pain, is another indicator of meningism. Conscious level may be depressed and there may be evidence of epilepsy. Other findings may include hypertension and pyrexia. Signs and symptoms will depend on a variety of factors and can occur according to the area of the brain affected.

A serious complication of subarachnoid haemorrhage is cerebral vasospasm. This is narrowing of a cerebral blood vessel which is thought to occur due to spasmogenic breakdown by-products given off by the clot. It

results in a decrease in CPP causing ischaemia and infarction to the affected area of the brain. Calcium blocking agents have been used in its treatment of which nimodipine is an example.

The main aim of treatment is to avoid another complication, i.e. potentially fatal recurrence of bleeding. In untreated patients, 30% will bleed again within 28 days, and 70% of these will die. An effective way to prevent re-bleeding is to place a metal clip across the neck of the aneurysm. This entails a craniotomy, a major neurosurgical procedure. Alternative surgical procedures include wrapping, which involves the application of muslin gauze around the fundus of the aneurysm. Wrapping may be combined with clipping in some patients. A third technique, known as 'trapping', may be indicated. This involves clipping the feeding vessels supplying a large aneurysm. A newer technique involves the insertion of helical platinum coils into the aneurysmal sac to induce thrombosis. The timing of surgery is crucial and opinions vary with regard to this. When surgery is carried out as soon as possible to avoid the risk of re-bleeding, there are higher morbidity and mortality rates during the operation. Delayed surgery decreases the operative risks but increases the risk of rebleeding. Antifibrinolytic therapy may be used in an attempt to prevent this.

### Nursing perspective

Sean Carroll comments on the nursing aspect of the incidents described:

This account highlights the potential difficulties of nursing neurological patients. These include both the nursing care and the availability of specialist beds and their location.

It is important to acknowledge that health care professionals perceive the care provided for their own relatives in a very different way from those who are not health care professionals. In reading Jane's account, I can identify with her difficult experience as a relative. However, there are three key areas that I feel must be addressed: communication and information giving; analgesia; and fluid and nimodipine therapy.

### Communication and information giving

Jane experienced communication difficulties immediately on admission. Alone and distressed, she was unaware of what was happening, and did not see Steve during his treatment; factors that are vitally important to relatives. Staff, although sympathetic, could have telephoned relatives or colleagues from the unit where Jane worked, to offer support. As a qualified nurse working in intensive care, Jane could have assisted the staff in helping to calm Steve who was frightened, especially during his CT scan. There is much positive evidence about relatives being present during patient treatment in accident and emergency departments (eg. Hanson and Strawser, 1992; Robinson *et al.*, 1998). The episode involving the monitor showing a flat line also highlights the importance of information given to relatives about any technical equipment used, an issue that Stroud (1997) discusses in depth.

When Steve was transferred to the general ICU,



communication improved dramatically, probably due to the fact that both medical and nursing staff knew Jane and that she felt more confident and secure in her own unit. Unfortunately, once he was transferred to the neurological unit, problems with communication occurred again.

Medical staff speaking to relatives should take place in the presence of the nurse caring for that patient, in complete privacy. Dyer (1993) suggests a quiet, private room where interruptions are unlikely. In my experience, while some units do not have purpose-built relatives' rooms, there are always offices available for this. It is unacceptable for this practice to occur in a corridor or anywhere that can be overheard by those not involved with the patient. It is also important that the next of kin is informed of any change in condition first, and that the information given to all family members is consistent. Otherwise, this will inevitably cause confusion and misunderstanding.

### *Analgesia*

Following subarachnoid haemorrhage, patients usually suffer from a severe headache. As pain is widely documented as a cause of raised intracranial pressure, which itself causes a headache, adequate pain relief should be a nursing priority for these patients (Hickey, 1995). Steve was prescribed commonly used drugs for neurological patients; DF118 intra-muscular injections and oral paracetamol. Patients are often frightened of injections, as Steve was, and refuse analgesia. An experienced nurse would be aware of the non-verbal signs of pain displayed by Steve. He was restless, fidgety and at times confused. Although the nurses within the neurological unit stated that they offered Steve injections, he refused to have them due to his fear. In my experience, gentle discussion, emphasising the benefits of effective pain management, often results in acceptance of the injection. Failing this, other analgesia or routes of administration should be considered, for example rectal sodium diclofenac, or small doses of intravenous opiates or benzodiazepines – with close observation of effect within an intensive or high dependency care setting.

The point that I feel is paramount in this case, is that his headache appeared to be getting worse. He was becoming more agitated and confused; classical signs of increasing intracranial pressure. Therefore I feel that the cause of his worsening headache should have been investigated.

### *Fluid and drug therapy*

Normovolaemia or hypervolaemia is standard therapy in subarachnoid haemorrhage and vasospasm (Sikes and Nolan, 1993). If oral fluids are not tolerated, then additional fluids should be administered intravenously. Within the 'Scope of Professional Practice' (UKCC, 1992), venous cannulation is now common practice for many nurses within acute health care settings. Had this been practised in the neurological unit, this would have enabled prompt replacement of the venous cannula that inadvertently came out. Cambell and Edwards (1997) acknowledge that patients who do not receive adequate hydration are at greater risk of cerebral vasospasm.

Although Steve was commenced on intravenous nimodipine at the referral hospital, Jane was informed that the tablets were as effective as the intravenous route. Information from Bayer (1997), manufacturers of nimodipine, advises that it is administered intravenously through a central catheter with additional fluids for the treatment of vasospasm, whereas tablets should be used prophylactically. Steve had a neurological deficit, so it is possible that vasospasm was present and therefore Jane's comment that she thought that the intravenous administration of the drug helped was valid.

### *Relationship with colleagues*

Deborah Dawson completes the commentaries by discussing two key issues: first, Jane's relationship with staff:

As a profession we can learn much from reflecting on our own practice and others' accounts of their practice. In order to write this commentary, I felt the need to process, for myself, the information contained in this article from my broader perspective, that of a nurse with a background in general adult and neuroscience intensive care nursing and management. I then felt able to concentrate on the task in hand.

I have chosen to raise some of the implications of Jane being both a member of staff and a relative in the District General Hospital ICU. In this I offer some thoughts rather than any solutions.

When I started working in ICU, I cared for a small number of patients who were relatives of school friends or friends of the family. This I found difficult and I made a conscious decision not to work too close to home. However, this is a difficult decision to carry out, as with shift work it is inconvenient to work too far from home. It is not then surprising that we may come across a situation like this where a relative of a member of staff becomes a patient on the ICU. This challenges all the previously formed relationships. Jane became 'a relative'; her husband became 'the patient'; her colleagues became 'the professionals' making crucial decisions regarding Steve's care and having intimate knowledge of both Steve and Jane's personal life. How do we cope with this? This is not only a reality for Jane, but for all her colleagues.

Jane states that she was allowed to 'choose' who cared for Steve. This raises a number of questions. How did the members of staff who cared for (and did not care for) Steve feel about this? What support did they receive, to enable them to care for Steve or perhaps to make the decision not to care for Steve? Did caring for the husband of a member of staff affect the decision-making process? It is easy when reflecting to ask these questions, but not so easy when faced with the immediacy of the dilemma. However, whatever decision is taken, and I do not believe that there are right or wrong answers when faced with these types of questions, it is important that we review our responses and learn from them for the future care of all patients and ourselves.

It is also most important to offer support to those involved. Sometimes just acknowledging the uniqueness of a situation allows individuals the chance to seek out whatever support they require. In other situations, sup-



port may need to be offered more overtly. This allows for the team to move on, subsequently having the strength to support Jane when she later returned to work. At this time, the team should acknowledge that she needs to regain the lost boundaries between work and home. Also she may need ongoing consideration for the time when home and work merged. This may be simply 'checking out' that Jane is managing all areas of her work, or needing to return to some in stages. Some days Jane may require particular support, perhaps with some patients or their families or on anniversaries special to herself and Steve.

This is a complex issue, which cannot be dealt with in the confines of this commentary, but an extremely important one on which to reflect and to think how we may manage it or similar situations.

### Inter-hospital transfer

Deborah moves on to consider the issue of transfer of the critically ill patient to specialist care:

Transfer of the critically ill patient is not something lightly undertaken by professionals. In Britain, approximately 11,000 patients are transferred each year (Mackenzie *et al.*, 1997). There are three main reasons for transfer: to receive specialist care that is not available in the admitting hospital; lack of a staffed bed in the local ICU; or, occasionally, to receive care nearer home.

Steve was transferred to receive specialist neurological care. To ensure appropriate expertise, it is necessary to have regional centres. These centres provide care to a far wider geographical area than a general hospital. Whilst they provide the necessary expertise for the patient, for the family it presents a new set of problems.

The patient is usually located farther from home than before, making visiting more difficult and expensive. Transfer frequently necessitates the need for a team from the referral hospital to accompany the patient during travelling. However competent members of the team may be, they are providing perhaps unfamiliar care in unfamiliar surroundings. Transfer can also provide disjointed care, where information is not easily passed on or received. The family may need to establish new relationships with staff, get used to different routines and may even have learn to interpret different styles of communication. It can become an 'us and them' situation, between the units.

Jane relates both positive and negative feelings regarding the transfer; 'only chance of survival' and 'I was quite worried'. Jane understood the requirement for specialist care, but felt isolated once she arrived at the referral hospital. In this situation, Jane had moved away from a familiar environment to a strange environment – an environment in which she became worried about Steve's care. Jane may certainly have looked through 'rose-tinted spectacles' when in her own ICU. However, having moved, I suggest her concerns are similar to those of any other relatives facing a traumatic event.

When receiving a patient from another unit, we (as nurses) are faced with a paradoxical situation, where

although the new team may have knowledge of the condition, they do not have the intimate knowledge of the previous care, whereas the relatives do have this. This sensitive relationship requires the staff to be aware of the potential for conflict, and to ensure they involve the relatives that little bit more. For, however good the knowledge and expertise, nothing can replace the humanity of individual care.

There is much in the literature suggesting that professionals are not happy with the current haphazard methods of transfer (Wilson, 1998; McGinn *et al.*, 1996). In 1988, regional transfer teams were proposed; however this has not been adopted. Retrieval is thought to be safer when members of the team providing care in transit are experienced in the care of the patient they are transferring; are appropriately resourced; are not pressurised by the imminent arrival of another patient to their unit; and are appropriately trained in the care of patients outside the 'safe' environment of the ICU. This is often not possible, but, as professionals, we must strive to provide the same quality of care outside the unit as we do within. It is important therefore that, however our patients are moved, the critical care team has considered the possible implications of transfer and provides appropriate resources in both equipment and personnel. Safe standards of practice should be maintained at all times during transfer, and a number of transfer guidelines have been written, most recently by the Intensive Care Society (1997).

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# On the receiving end: experiences of being a relative in critical care

## Part 2

*Paul Fulbrook, Pam Buckley, Carolyn Mills, Gary Smith*

### Summary

- This is the second of a series of three papers, presenting in her own words the experiences of Jane, an intensive care staff nurse, whose husband suffered a subarachnoid haemorrhage
- In part one, Jane described her husband's admission to the accident and emergency department, then via high dependency care to her own ICU, and his subsequent transfer to a regional neurological unit
- In part two, Jane describes the care her husband received in the regional neurological unit
- She gives a powerful and moving account of her experiences as a relative on the receiving end of critical care
- There are many aspects of her husband's nursing and medical care, with which Jane remains dissatisfied
- Some of these issues are discussed through professional commentaries, which are offered in the latter part of the paper

*Key words:* Brain stem death, Families, Organ donation, Reflection, Relatives, Subarachnoid haemorrhage

This is the story of Steve who was admitted to intensive care. It is told through the experiences of his wife Jane, an intensive care staff nurse. She expressed a therapeutic need to tell her story and felt that it was an essential part of her grieving and healing process. Her main wish is that others may learn from her experiences. The story was told through an unstructured, informal interview. For reasons of confidentiality all names have been changed.

Jane's story has been neither enhanced nor diluted. It is told in her own words. My role as interviewer/writer (PF) has been to act as a medium through which Jane could recount her experiences. The only editing I have done has been either for grammatical presentation or chronological ordering. I have made no attempt to analyse, or indeed judge, anything she had to say. That task is for the individual reader.

Jane presents a powerful, often very moving account of what it was like to be a relative in critical care. It is fair to say that there are many aspects of the nursing and medical care that her husband received which Jane remains unhappy about. However, I believe we can learn much by listening to what she has to say. This is the second of a

series of three papers in which Jane reflects on her experiences.

In part 1, Jane described her experiences, when Steve was admitted to her own ICU and his subsequent transfer to a neurological unit. In part 2, she continues her story, describing the care of her husband in the neurological high dependency and intensive care units. Finally, part 3 will include Jane looking back on her experiences.

In order that we make sense of what Jane has to say, and also so that we might use her experiences as a vehicle for developing our own practice, I have invited some professional colleagues to give a personal commentary on some of the issues, which they find particularly important. These are given at the end of each paper.

### BACKGROUND

Steve had been unwell for a couple of days and had gone to bed early with a headache on a Sunday night. He shouted out suddenly, then started to fit.

Jane called an ambulance. He was taken to hospital and CT scanned and was found to have had a subarachnoid haemorrhage.

Steve was admitted to the local district general hospital and then to the ICU where Jane worked as a staff nurse. He was taken to HDU but continued to fit, so he was taken to ICU, where he stayed for a couple of days until they had a bed at the regional neurological unit. During that time he did not deteriorate but did not improve. He was conscious all the time.

He went to the regional neurological unit on the Tuesday but was never well enough to have an angiogram or surgery. While waiting for his vasospasm to settle down he developed hydrocephalus and deteriorated. He was intubated and ventilated. On the following Monday brain

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stem tests were carried out but he took a breath so the tests were repeated 24 hours later. He passed these tests and went for organ donation.

Jane's last words in part 1, having left Steve in the neurological unit for the first time were, "I don't know whether it was the journey or the combination of a lot of things but he just wasn't so good then. I was quite worried when I left him that night".

## Tuesday

*Jane:* On the Tuesday (the day he was transferred to the neurological unit) he wasn't too bad. On Wednesday morning he wasn't any better but he wasn't any worse.

When the consultant came to see him Wednesday afternoon he felt that there should have been signs of improvement. He was concerned that he might be developing hydrocephalus. Every day after that he just got worse and worse.

We visited Steve every day, and every day the nursing staff were trying to be optimistic. I suppose they were trying to help me. They were obviously being guided by what the doctors said. Initially, the doctors said that they could operate, and that he needed an angiogram. His vasospasm was very bad on the Wednesday afternoon. They said, "Well, if it's still bad tomorrow we'll give him a GA so we can do the angiogram". When he had vasospasm I'd just sit there and try to will it to settle down.

When I went in the next day I saw a different doctor. I asked about his angiogram; he said, "It's not safe". It was so frustrating having to wait for the vasospasm to settle down. I knew that the longer Steve had to wait the more likely it was that something was going to go wrong. I just felt totally helpless. It was very frustrating.

He was developing a chest infection. I could see that he was. I could hear it. He had a temperature. He was more confused than normal. He was coughing. I could see by the colour of his sputum that it was infected but the nurses wouldn't have it. Why wasn't anyone listening to me?

My mother-in-law challenged one of the nurses: "I think he's getting a chest infection". I could see that she (the nurse) was annoyed. She looked at the notes and said, "There's nothing in the notes so we can't do anything". A moment or two later she said, "Oh yes, he's got a chest infection, and they've put him on antibiotics". They prescribed 1.5 grams of cefuroxime. I remember thinking that 1.5 grams was a high dose and not really specific for a chest infection.

We had to wait ages for the first dose to be given. I was thinking, "I'll give it myself", but because I was in another hospital I felt powerless. We just had to wait. Eventually even my mother-in-law was hounding the nurses to give the dose. It was never given. The next day I came in and it was crossed off. I remember wondering whether that was because they wanted to get a specimen to identify what bug it was or whether it was because they thought there was no point in treating his chest infection.

*PF:* What do you think?

*Jane:* There was no point in treating his chest infection.

Anyway, I suppose if I hadn't looked at the drug chart I would never have known. I wasn't supposed to look at the drug chart.

## The CT scan

*Jane:* On the Wednesday when the consultant mentioned hydrocephalus he said it was very difficult to detect on CT scan.

He was supposed to have had a CT scan on the Friday but it was cancelled because the patient in the next bed was fitting. When they came to collect Steve for the CT scan nobody was free to go with him, so they cancelled it. I thought at the time, "Well, it can't be that bad then, if they're cancelling it until tomorrow morning". Now, when I think about it, if they were talking about hydrocephalus on the Wednesday, and he was already deteriorating why didn't they do something sooner?

It wasn't until the Saturday that they finally decided to CT him. They said that he had deteriorated but there wasn't much change in the scan. Afterwards he was taken to neuro ICU.

## Neurological ICU

*Jane:* When we first went into the ICU, a nurse was doing neurological observations. My brother-in-law was with me, and he was obviously in the way a bit. He said, "I can see I'm in the way, where do you want me to go?". She said, "Out in the middle of the car park". We just looked at one another. I thought, "How can you say something like that knowing Steve is so desperately ill". She was trying to make a joke, but she was so cold. You know, the only time that she said something nice to me, was after I said goodbye to Steve for the final time. As I left she put her hand on my back and said, "All right?", which was a really good thing to say at the time. But the rest of the time she was totally unsympathetic, and she was typical of the staff.

He had lost consciousness and wasn't reacting. He was really sick. I knew something was going to happen. We weren't allowed in at first and were sitting in the relatives' room when the arrest bleep went off. I knew it was him. I ran out and a nurse told me he'd had a respiratory arrest. She wasn't even the one looking after him. The nurse who was looking after him didn't say anything.

She came back later and said that "No, he hasn't had an arrest, it was a fit. His blood gases are improving but he's really sick, and we're going to put a central line in."

Something was going wrong. Later, a registrar, who we had seen before said, "We think it's hydrocephalus, so we're going to take him for another CT and we'll do a burr hole". That was the only time that somebody gave me any real information about what was happening.

He had two CTs. The first one didn't show much change but the second one revealed swelling ... and they decided that it was hydrocephalus. By then it was too late.

## Burr hole

*Jane:* When I left him before he had his burr hole it was terrible, his systolic was way over 200. His heart rate was 170 and he was really struggling. I think he was suffering



so much. It was so horrific. What that was doing to his brain I dread to think.

After Steve had his burr hole done on Saturday night they said he was improving. (My Dad stayed all night with him). He couldn't talk but he was starting to make noises and the nurses said that was a good sign. My Dad telephoned us at home, and for the first time it seemed that things were starting to improve. I still knew it was really bad but I also felt that something good had happened for the first time.

### Sunday

*Jane:* When we arrived on Sunday morning Steve's pupils were fixed and dilated. I felt like they [nursing and medical staff] gave us hope when they shouldn't have done. I really wasn't expecting his pupils to have "blown". My brother-in-law was with Steve when I arrived. As we came into the unit he said, "His pupils are fixed and dilated". He didn't have any medical knowledge so he didn't realise how bad it was. I remember saying "Well, that's it then". I couldn't believe that they just let him tell me. He didn't know how bad it was.

We weren't allowed to see him because he had just been intubated and had to have a chest X-ray. Then they took him for another CT scan, which they said would take three-quarters of an hour.

We went outside. It's funny; the whole way through, the weather was really nice. It was almost an insult. We sat outside and then the three of us went for a walk around the block. We were just waiting for 'it' to be confirmed. Even then my Dad was saying, "You mustn't give up hope, miracles can happen". But I think they all knew.

Later, after the CT scan, the consultant came to see Steve. As he came out from behind the curtains with all his entourage, he just walked straight past me. I said, "Is Steve going to cone?" – because his pupils had been fixed and dilated before he had been to CT and then they had started to react again. He said, "Well, his situation's grave but I don't think he'll cone today or tomorrow but he might cone on Tuesday". That was in the middle of the ward where everybody could hear!

I went in to see Steve and I asked the nurse if his pupils were still reacting and she said, "Haven't they told you? He's coned".

I thought, "Why did he say 'grave'?" He should have said, "There's no hope" or "He's going to die". To say that it might happen on Tuesday when it had already happened was very bad.

They said that there was extensive oedema. When we saw Steve he was on a ventilator, and I just had to check for myself that his pupils had dilated. Then, I just remember going to sit in the waiting room and being totally devastated. That was the first time a nurse brought us a cup of tea. She wasn't even a nurse from ICU; she was from the ward.

I remember thinking how you often feel inadequate as a nurse in this situation, and you offer a cup of tea. I now know how important that is. It just shows that – there's nothing to say because there isn't – they still care. Giving a cup of tea shows that they want to do something.

### Honesty

*Jane:* I really do believe that they knew right from the start that Steve was not going to survive and I think they should have told us that right from the start. I think it would have been harder for my mother-in-law and my parents because all the time, when I was saying that he was going to die, they were saying, "No, you've got to be hopeful". If somebody had said, "He's going to die", although I would have been devastated, I think it would have just confirmed what I always knew. I just think they should have been honest; no matter how difficult it is to give bad news. I've got no respect for them because they didn't tell me the truth. If they had told us that he was going to die right from the start everybody would have had a bit of time to prepare themselves.

### Brain stem tests

*Jane:* We had to come back the next day [Monday] for brain stem tests. We had arranged for them to ring us after the first set, which they were going to do in the morning at 8 o'clock. We said that, unless we heard otherwise, we would come in at 1pm for the second set.

We didn't hear anything so we turned up at 1 o'clock, only to be told that he'd failed his first set and we were going to have to come back the next day. I was absolutely devastated because nobody had thought to 'phone us. We would have still come in to see him but we had been sat at home all morning preparing ourselves to say goodbye to him. I know it sounds awful but I was so disappointed that he had failed, because it meant that we had to go away again and psyche ourselves up to come back in again.

*PF:* How did you feel after that, having prepared yourself mentally once already?

*Jane:* Nothing was happening – it was all over, but we just had to wait. I was so angry that nobody had thought to call us. To me, that was the worst thing: not to tell us. I just think it was awful. You know, you sit at home and prepare yourself for coming in to see your husband for the last time; having to say goodbye – and then having to find out you've got to come back again – and it was the fear of not knowing how long it was going to take for his brain to die. It was just awful.

The female doctor who saw us then was really good. She told us that he had failed [the first set of brain stem tests]. I hadn't met her before then, but she knew I wasn't very happy. I don't know whether she realised that things hadn't been done very well but she went through things with us which nobody else had bothered to do.

She telephoned me after the first set of tests the next day [Tuesday] and said that he had passed, and when we went in again at 1 o'clock he had passed the second set. It was a relief; Steve wasn't alive any more. It was just prolonging it for him and it was prolonging it for us as well.

She said, "Is there anything you want to ask me? I'm sure there are questions that you want to ask me". At the time I just couldn't think of anything. I was very pre-occupied with what would happen to Steve. But at least she asked.



## Organ donation

*Jane:* We decided that we would go for organ donation, so he went down for that later on.

*PF:* How was that approached?

*Jane:* I brought it up.

*PF:* So did nobody talk to you about it?

*Jane:* No.

*PF:* Do you think that they should have done?

*Jane:* Yes, I think so. The female doctor would have been very good because she had a way of being able to talk to you, whereas the nurse who was looking after him (who I didn't like very much), I don't think would have done it in a very good way.

Anyway, I brought the subject up. I just wanted something good to come out of it really; to think that if somebody else received Steve's organs that he was living on in them. It was just one good thing that could happen out of this totally awful situation for us.

Five people did receive his organs. I've heard from two, which is really nice. They both said that they were aware that it's a very sad situation for me but that they were really grateful that we had given them a chance. It's quite comforting really.

Steve never talked about organ donation. It was my decision, so for a long time afterwards I did wonder about it. People said I had done the right thing but I did wonder, because it was just something that we hadn't talked about. However, I knew that if it had been the other way around I would have wanted him to donate my organs. So I did it, but it wasn't a clear cut. At the time I knew I had to do it, but thinking about it afterwards I have thought, "I hope I did the right thing". But then his organs were no good to him any more. So, looking back on it, I would probably have felt worse if I had decided against it.

We said goodbye to him at about 2 o'clock and he didn't go down [to theatre for organ donation] until 8. Looking back now, I think, "How could I leave him on his own all that time?". But I just couldn't stay.

How could I have left him? I had to say, to the nurse who was looking after him in the afternoon, "You will look after him, won't you". Because I knew what was going to happen. That was another thing: knowing he was going to be wrapped up in a body bag. Knowing those sorts of things was horrible. I just had to say that to her, because I couldn't [look after him]. I had to say it because I didn't know that they were going to be nice to him. I felt I had to ask.

*PF:* To you he was still very much a person?

*Jane:* That's right; and the thing is, he looked as if he was asleep. I know some people find it difficult to accept that someone is dead if they're on a ventilator, but that's my last memory of him. I haven't got a picture of him lying

cold and blue. That helped me. I haven't got a horrible memory of him lying dead. He did just look asleep. His blood pressure was fine, his heart was fine and he was completely still, which of course he hadn't been before.

[Part 3 of 'On the receiving end' will appear in the next issue of *Nursing in Critical Care*.]

## PROFESSIONAL COMMENTARY

### Nursing perspective

Carolyn Mills comments from a nursing perspective, emphasising the importance of therapeutic presence:

This transcript raises many issues for nurses and nursing: the key issue that arises out of it for me is the issue of being therapeutic with patients and families. There is a considerable amount of literature available addressing the issue of nursing as a therapy. For me being therapeutic is about making a difference. In the past, a necessary psychological task for the entrant into any profession which involved working with people, was the development of adequate professional detachment. Today therapeutic nursing care is seen as getting into the heart of practice – the nurse-patient/family relationship – when professional detachment is abandoned in favour of 'closeness between the nurse and the patient' (Pearson, 1988). McMahon (1986) endorses this view, seeing nursing as a 'therapy in itself', confirming the belief that the power of the nurse to promote healing lies in this therapeutic relationship, that endorses 'the therapeutic self' and a nurse-patient relationship characterised by partnership, intimacy and reciprocity. In the transcript there is little, if any, evidence of the nurses and medical staff (apart from the one female doctor) working therapeutically with Jane and other family members.

### Therapeutic presence

One of the key concepts associated with therapeutic use of self is presence. There is a paucity of literature relating to presence; what is available is mainly from the USA and appears to be rhetoric rather than research based. What is clear is that presence is a complex phenomenon. Common key elements identified from the literature are: that presence is more than being with the patient in a physical sense; that it involves interpersonal competency and rapport; and that it is mutually therapeutic, i.e. there is benefit for the nurse, patient and their family.

An action research study undertaken looking at 'presence' in critical care nurses working in the Chelsea & Westminster Intensive Care & Nursing Development Unit (Mills, 1998) formed the following emergent view of presence:

- It is an integral part of everyday nursing practice; the presence or absence of presence is associated with positive and negative outcomes for nurses, patients and their families.
- To have presence an individual must have: time; empathy; rapport; respect for people; an individ-



ualised focus to their practice; self-awareness; commitment to caring actions; a humanistic personal philosophy; personal energy; and authenticity.

- Presence involves: reciprocal communication (verbal and non-verbal); love; giving explanations; sharing; being engaged with the patient/family; investing time and energy; knowing the patient; giving some of personal self; and being in tune with the patient.
- Whether or not to have presence is a choice. It was also recognised that there are times when absence is therapeutic for the patient/family and/or the nurse.

The researchers (Mills, 1998) believed that for some people presence is a gift, and that others have the potential to develop knowledge and skills of 'presencing' through role modelling and other teaching methods. They also felt that some people would never have presence.

Key outcomes of presence for patients and relatives were identified as: reduced anxiety; reduced distress; reduced anger; increased sense of security; increased potential for mutual interaction; increased trust in the nursing staff. Lack of presence was seen as having a negative affect on patients and families and was equated with poor nursing care.

Focusing on outcomes reinforces the moral commitment that nurses should have to a philosophy of care, which sees presence as normative action.

### Negative and positive outcomes

It is clear from Jane's story that having a relative being cared for in the ICU in question was a particularly negative experience. Most of the positive outcomes of presence identified above, were not apparent in this situation. In fact, the impression that Jane gives, is of someone who was angry with the care/situation, who had no sense of security/trust in the team caring for her husband (she states that she did not trust the nurses when she was not there), and had little mutual interaction with them.

The ability to have presence was recognised in Mills (1998) study as being influenced by a number of things: organisational culture; peer pressure; intuition; expertise; professionalism; drawing boundaries between personal and professional self; internal factors such as personal values/beliefs; and external factors such as the business of the unit. Jane's transcript does not allow us the insight to explore these but as all the staff appeared to behave similarly, it does raise questions about the culture of the unit. There are mixed views of the interaction between technology and nursing practice, the most common view being that they are polarised opposites (Walters, 1995b). Others see that humanistic caring is possible in the midst of the highly technological environment (Ray, 1987; Cooper, 1993; Walters, 1995a). What was the view of the staff on the unit in question? There appears to be little evidence of humanism in their actions.

A commitment to a therapeutic relationship raises the issue of setting boundaries between personal and profes-

sional self. There is little in the literature on presence relating to drawing boundaries; and the broader implications of personal and professional boundaries is an issue that has received little attention. There is potential for both over- and under-involvement in therapeutic relationships. We need to acknowledge the uniqueness of each individual and their responses to a specific situation. The UKCC Code of Conduct (1989) provides some guidance for individuals in setting boundaries. However, this probably has most relevance for extreme situations and not the more straightforward circumstances, when the nurse might need support to come to a decision on what is considered to be acceptable practice for each individual situation.

All nurses have a professional duty to practise in a way that seeks to avoid harm and to benefit the patient (UKCC 1989). If nurses do not make an attempt to develop a therapeutic relationship with their patients/relatives they are making a moral choice about the performance of patient care. In relation to ethical knowing (Carper, 1978), the nurse is omitting something that ought to be there in any nursing situation: a commitment to the person and how they are feeling, the protection of human dignity and preservation of humanity. The licence to practise nursing does not include permission to practise poorly. A certain level of professional competence.

### Pathophysiology

Gary Smith continues the commentaries, first explaining the pathophysiological events that led up to Steve's death and, secondly, describing how the diagnosis of brain stem death is made:

In Steve's case, brain stem death was the result of a combination of increased intracranial intravascular volume (brain swelling); increased brain water content (brain oedema); hydrocephalus (increased ventricular cerebrospinal fluid); and vasospasm, all serious complications of subarachnoid haemorrhage. Together these led to a rise in intracranial pressure (ICP) to a level at which cerebral perfusion was not maintained, causing cerebral ischaemia as a result of reduced cerebral perfusion pressure (CPP). Steve's high systolic blood pressure prior to burr hole surgery was most likely a compensatory attempt to maintain cerebral perfusion in the face of high intracranial pressure. Hypertension in association with raised intracranial pressure is often accompanied by bradycardia and is termed the Cushing reflex.

A sustained rise in intracranial pressure to high levels (> 20 mmHg) can lead to herniation of brain tissue through the foramen magnum with resultant compression of the brain stem. This terminates the normal functions of the brain stem (maintenance of consciousness, control of blood pressure, regulation of respiration and control of cranial nerve activity) which, in turn, implies that the death of the patient is inevitable. When compression occurs in a non-ventilated patient, death results from the cessation of respiration and heartbeat. However, if ventilation and circulation are supported by intubation/ventilation and fluids/vasoactive drugs, asystole and apnoea can be prevented. Despite underlying death





of the brain stem, these 'patients' can be maintained in a state that resembles life in every way. They have a heart beat and a blood pressure; their chest walls move because of artificial ventilation; they are warm and pink. Jane vividly describes this state in her final paragraph.

### Diagnosis of brain stem death

In 1976, the Medical Royal Colleges and their Faculties (MRCF) in the UK agreed that brain stem death was equal to death of the brain as a whole (MRCF, 1976). Subsequently, they indicated that brain stem death should be regarded as death of the individual (MRCF, 1979). At the same time, a strict set of guidelines for the diagnosis of brain stem death was issued. These indicated that for the diagnosis of brain stem death to be satisfied, certain pre-conditions must pertain. First, the patient must be comatose and requiring artificial ventilation. In addition, there must also be a recognised cause for the coma, which should also be a cause of irremediable structural brain damage. Causes of brain stem death regarded as acceptable in this context include head injury, intracranial haemorrhage, cardiopulmonary arrest, drowning, hanging and meningitis. Next, it is essential that all reversible causes of apnoeic coma (e.g. drug intoxication, primary hypothermia and metabolic disturbances) are excluded and it must be confirmed that the patient's lack of response is not the result of therapeutically administered sedative or neuromuscular blocking drugs. Finally, the presence of abnormal posturing (e.g. decorticate or decerebrate) or seizure activity implies residual brain stem function and precludes testing.

The components of brain stem function tests seek to determine that there is no brain stem function. As such they test for the absence of cranial nerve reflexes, any central response to peripheral stimulation and spontaneous respiration. There must be no pupillary response to light (tests cranial nerves II & III), no corneal reflex (V & VII), no response to the injection of 20ml of ice-cold saline into each ear [the caloric test] (VIII, VI & III), no motor response within the cranial nerve distribution to adequate stimulation of any somatic area (VII & V), no gag reflex in response to pharyngeal stimulation and no cough reflex in response to tracheal stimulation (IX & X). Absence of respiratory effort is established by showing that no respiratory effort occurs during disconnection from the ventilator, for long enough to ensure that the PaCO<sub>2</sub> rises to a level capable of stimulating any functioning respiratory centre neurones. In order to prevent hypoxia during the test, 100% oxygen is insufflated down the endotracheal tube. It may be necessary to administer carbon dioxide prior to removal from the ventilator if the PaCO<sub>2</sub> is particularly low. It must be proven that no respiratory effort occurs during 10 minutes of disconnection and that the PaCO<sub>2</sub> has risen to a minimum level of 6.65 kPa (50 mmHg). In some countries, but not the UK, brain death is confirmed using EEG, cerebral blood flow and/or brain stem auditory evoked potential studies.

Assuming that the tests indicate that brain stem function is absent, the tests are repeated some time later. The recommended interval between the two sets of tests has progressively shortened. The UK guidelines suggest

that two doctors with appropriate skills should carry out brain stem testing. One should be a consultant and the other a consultant or senior (specialist) registrar. Following confirmation by the second set of tests that brain death has occurred, the patient is declared dead. The time of death is the time that the patient is declared dead: this is now accepted as the time of the first set of tests.

Jane describes how Steve 'failed' his first set of brain stem function tests; however, the exact details are not apparent from her commentary. The most likely reason is that, as different groups of neurones are likely to die at different rates, some brain stem functions will disappear before others. An alternative explanation may be that Steve had exhibited marked spinal reflexes – reflexes which have their afferent and efferent pathways below the level of the brain and which can persist despite total brain death – and that these were not interpreted correctly by the medical staff. These circumstances are potentially distressing, as they are liable to give false hope, and relatives should be counselled that spinal reflexes do not imply that survival is possible.

The diagnosis of brain stem death permits the legal termination of ventilatory support. For those in whom organ donation is not appropriate, reconnection to the ventilator does not occur after the second set of tests. However, if organ donation is to occur, it is vital to maintain the donor organs in optimal condition. This may involve the administration of fluids, vasoactive drugs, hormonal supplements (e.g. tri-iodothyronine) and the use of additional monitoring (e.g. pulmonary artery catheters).

### Organ donation

Pam Buckley completes the commentaries by discussing some aspects of organ donation:

Organ donation is an uncommon event in most general hospital ICUs and only occurred 10 or more times per year in 20 hospitals in the UK in 1997 (UKTSSA, 1998). All of these hospitals had a neurosurgical unit nearby, caring for patients who became brain stem dead, on a relatively frequent basis.

The United Kingdom Transplant Co-ordinators' Association/British Association of Critical Care Nurses/MORI Relatives' Refusal Study (1995) reported on 1991 cases of brain stem death in which organ donation was considered. This study identified that 26% of relatives of brain stem dead patients refused any organ donation from their loved one. However, 18% of relatives offered donation spontaneously.

Jane is an ICU nurse who obviously has a greater level of knowledge about the medical issues involved in her husband's care than the average member of the public. She has an understanding of organ donation, brain stem death and the appropriateness of a request for donation. Throughout her recollections of the stages of Steve's care, she describes the poor relationships that she had with many of the nursing and medical staff. This largely related to poor communication between them and herself. She was given conflicting messages about his prognosis and described unexplained changes in his treatment plan. Words include 'totally unsympathetic' (a neuro ICU



nurse) and 'I've got no respect for them' (neuro medical staff). Perhaps, because of these poor relationships, no staff member had discussed the subject of organ donation with Jane at the usual time, after the first set of brain stem death tests. It seems that had the family not opened the topic of donation, it would not have been broached.

Jane made this offer of donation based on her own opinions, as she and Steve had not discussed the subject. She describes her decision as 'one good thing that could happen out of this total awful situation for us' and 'it's quite comforting really' when told of the welfare of the transplant recipients. The female doctor, with whom Jane had a good rapport, missed the opportunity to make the request.

Despite her positive feelings about her decision to donate Steve's organs, she was apprehensive about the organ donation procedure and does not describe any support or information from the Transplant Co-ordinator. Misconceptions such as notion of the body being wrapped in a body bag (not usually the case) filled her with horror. She also describes concern about staff 'not being nice to him'. The input of the Transplant Co-ordinator at this point might have helped Jane to feel more confident about the care Steve would receive during and after organ donation. Clearly, there was some information given later when she heard that five transplants were performed and had been forwarded two letters from recipient patients.

The six-hour delay between Jane saying goodbye to Steve at 2 pm and the organ retrieval operation at 8 pm was due to the offer of donation by Jane after the second set of brain stem dead tests at 1 pm. This time interval is not excessive given that transplant teams have to be mobilised and recipients of the organs admitted to hospital. Jane describes this period as 'all that time' and given

that Steve had been in hospital for 10 days, a further six hours' wait until 'the end' did cause concern to her. Transplant teams must be sensitive to this and expedite the donation procedure.

My overwhelming impression of Jane's account is that, but for her knowledge of organ donation and expressed willingness for it to be carried out, the opportunity for the five recipients would have been missed. Had this been the case, Jane would have been denied the comfort she has gained from their return to good health.

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# On the receiving end: experiences of being a relative in critical care

## Part 3

*Paul Fulbrook, Jacqueline Creasey, David Langford, Kim Manley*

### Summary

- This is the third of a series of three papers, presenting in her own words the experiences of Jane, an intensive care staff nurse, whose husband suffered a subarachnoid haemorrhage
- In parts one and two, Jane described the care her husband received in the accident and emergency department, in high dependency care, in her own ICU, and subsequently in a regional neurological unit
- In part three, she completes her story and reflects on her experiences
- Some of the issues arising are discussed through professional commentaries, which are offered in the latter part of the paper

*Key words:* Critical care, Families, Grieving, Reflection, Relatives

### INTRODUCTION

This is the story of Steve who was admitted to intensive care, told through the experiences of his wife Jane, an intensive care staff nurse. She expressed a therapeutic need to tell her story and felt that it was an essential part of her grieving and healing process. Her main wish is that others may learn from her experiences. The story was told through an unstructured, informal interview. For reasons of confidentiality all names have been changed.

There are many aspects of the nursing and medical care Steve received about which Jane remains unhappy. I believe we can learn much by listening to what she has to say.

In this third paper of the series, Jane reflects on some of her experiences.

### Facilities for relatives

*Jane:* One thing that I thought was really bad at the neurological unit was the facilities. Parking was a problem. We would spend ages queuing to get in the car park. The first day that Steve was in the neuro unit we didn't notice the sign that said we needed to get a ticket from the ward to pay less. So, when we left the unit and went to pay at the car park we found we had to go all the

way back to the ward again. It would have been nice if somebody had given us some information beforehand. The waiting room was a long way off from the neuro ICU, and there was a sign on the outside that read, 'Do not use because of dust'. Well, we had no choice; we had to use that room, which was awful. We had to use that same room – with other relatives – when we knew that Steve was going to die. They could see we were distraught and they tried to comfort us but there was nowhere else for them to go.

We were never once taken into a room and spoken to privately, it all happened out on the ward. I mean, even when I asked the consultant, 'Is he going to come?' there were all those people standing there, and not one of them thought to take me into a room and speak to me where nobody else could hear. There should have been a room where we could have been told bad news – somewhere we could have had some privacy.

Also, if somebody wanted to make a 'phone call they had to use the 'phone in the waiting room. It wasn't very private. There was nowhere to make a cup of tea, apart from taking the long walk to the main entrance of the hospital. The waiting room should have been usable and there should have been tea and coffee facilities.

After being told to sit in that recess (on the first day), when we used to visit after that we used to sit there – but the domestics really told us off: 'You're not supposed to sit there, if Sister sees you there you'll be in trouble!'. That was just the last thing that we needed.

### Honesty and information

*Jane:* I just wish they had been honest with us. It was so obvious that he couldn't survive. There were some research nurses working in the unit, and he was in the drug trial. I'd say, 'Can he survive this?' or I'd say, 'He can't survive this' and they would say, 'Yes he can, we've seen people survive, he could still survive, he could come out of this normally'. Looking back on it now, I reckon

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they knew right from the start that Steve wasn't going to survive, but they couldn't tell me. They weren't honest with me, and yet they'd tell other people. I don't know why they wouldn't tell me. All the way through I had to keep asking them.

**PF:** Are you saying that friends and relatives were being given information but not you?

**Jane:** Yes. When the doctor told my mother-in-law that he thought Steve would be a cabbage, she was so shocked because he'd said before that he could live or he could die. You know, that it could go either way. Obviously she was looking towards the positive side. She was so shocked. They spoke to my friends before me! I suppose they didn't want to upset me. Although they told me afterwards, I just think, why couldn't they have been honest? I don't feel that they were honest with me the whole way through. If they'd have said, 'Yes, he could live or he could die, but my feeling is he's going to die', or 'If he survives he's going to be brain damaged' ... or if they had just given me some idea of the outcome. But they never did.

We had conflicting information from consultants. On the Wednesday the neuro consultant said that Steve had an aneurysm in an unusual place, and although it wasn't favourable, it was operable. Yet later, after Steve had died, the consultant anaesthetist told us that because of the location of his aneurysm there was never any chance of survival; it was too close to his brain stem. I thought, 'How can two consultants say two totally different things?'. Because I was first told it was favourable it gave me hope ... and then she (the anaesthetist) turned round and said there was never any chance anyway! I just think that communication was awful.

### Communication

**Jane:** Apart from the doctor who saw us on the first night (in the neurological unit) there was nobody who spoke to us really. It was always me asking them. When on the first day the consultant said he might be developing hydrocephalus I felt as if his attitude to me asking questions was, 'Who are you to ask me questions?'. I really did feel that his attitude was, 'You aren't supposed to speak to me'.

There was a female doctor who saw us after Steve's pupils had blown. She really communicated with us. I just think that if she had been involved with us from the start, it would have just been ... well, not better – because it was awful what happened, but it would have been more bearable. I would have had more faith in them. As it was, I've got no respect for them whatsoever.

Now that I'm back at work I occasionally come across one of the neuro consultant's patients and I think, 'God help them!'. He could be a brilliant surgeon for all I know but as far as his communication skills are concerned they are diabolical. And that was the same for most of them. I remember thinking it was always me who had to ask. Even if they had said something simple, like 'no change', it would have been better. It was always me having to ask them. They weren't very communicative and I didn't like

ringing up. If I did ring the nurses never said much. At the time I thought perhaps the nurses are not being very co-operative because they feel threatened by me, but then they didn't communicate any more with any of the other relatives.

There were two nurses who I felt were quite good. One was an enrolled nurse. When we arrived on the Saturday she said, 'Oh, I was just going to phone you. I don't feel he is as well'. That was the first time I felt someone had communicated.

The other nurse was a sister. I thought she was good because she treated Steve with respect. There was the time when Steve was getting a very stiff neck; he was obviously developing hydrocephalus in a big way. She was worried and got the doctor, but he just turned round and said, 'Oh, it's the blood, you'd expect that'. But she'd seen a difference and I had as well, and she had tried to do something about it.

**PF:** Did you attempt to rationalise why the doctors and nurses were behaving in the way they were?

**Jane:** Not at the time, I just used to get annoyed. As far as the nursing care was concerned there should have been no reason why he wasn't looked after properly. Looking back on it as far as the medical side of things is concerned, I think that because they knew he wasn't going to survive they didn't really do a lot. I didn't see his notes but I am having them sent to me, so it'll be interesting to see their side of it.

### Nursing care

**Jane:** I went in one afternoon and found his nimodipine on the locker and I said to the nurse, 'Why hasn't he had these?'. 'Oh, he was in X-ray'. 'Well, yes he's come back from X-ray, why hasn't he had them?'. 'Oh, he was asleep'. So I said, 'Right, I'll give them'.

On another occasion when one of the sisters came along with the drug trolley the patient in the next bed was trying to get out. She became involved in trying to get him back in and pacify him. When she came back to the trolley she looked at Steve's drug chart and said, 'Oh, I can't do this' and put his drug chart back. Steve was frequently missing doses of nimodipine; fortunately I had just given him one. It was late but at least he had it. One of the research nurses was there and I said, 'Why did this happen, why didn't she give it to him?'. She went and spoke to the sister who said, 'I did give it, I just forgot to sign', which was a load of rubbish because I was there and I know that she didn't give it to him. That was bad.

They weren't even busy. They were well staffed. I remember thinking that when you are busy certain things do have to wait, but things like tablets should have been given and I know they weren't. There were lots of occasions like that.

**PF:** Nurses often feel that relatives are watching over everything that's done; watching their every move. Do you feel that's what you were doing?

**Jane:** Yes, I know I was. I think it's because you've just got



that extra bit of knowledge and you want things to be done right. When they were suctioning I wanted to make sure that they were doing it right. When it's on somebody you love you want it to be done right.

Later on, on the unit, I don't think I interfered badly. I just wanted to know that he was getting good nursing care. If he wasn't, then I had to say something.

*PF:* On reflection, was it a good thing to have medical and nursing knowledge or do you think you would have been better off being ignorant?

*Jane:* As far as the neurological unit was concerned I would have been better off being ignorant. At the time my mother-in-law said, 'It's a good job you're here because we wouldn't have known what was right'. But it was bad at times. For example, when Steve wasn't given his doses of nimodipine. I knew his vasospasm was the main problem; that was a worry to me. Now, I keep asking myself whether that had a detrimental effect on him. Later on, I could see he was getting a chest infection and they wouldn't acknowledge it until he was really bad. So no, I don't think it helped having knowledge.

*PF:* One of the important things in nursing is continuity of care, how do you feel about that?

*Jane:* There wasn't any! I think it was primary nursing that they were supposed to practise, and the nurse who was Steve's named nurse was one that I didn't like, she was the one that didn't give him his painkillers.

*PF:* Is that why you didn't like her, or were there other things?

*Jane:* Well, I felt that she didn't know what she was doing. I just didn't have confidence in her – she was a 'flapper'! She'd make out that she was really busy but did not get anything done.

When I was concerned that Steve might be constipated I asked her whether he was on laxatives: 'Oh yes, he's on laxatives, that's all in order'. When I looked at his chart he wasn't written up for anything. She didn't give him his painkillers. I felt it was just that she couldn't be bothered to go and draw up an injection. I know he didn't like injections, but she didn't even try. I felt that if she had reasoned with him he would have had an injection, so that was why I didn't like her. Well, it wasn't that I didn't like her. I just didn't have any faith in her. It was when he was her patient that there was no food ordered, whereas the ones that I liked seemed to know what they were doing.

It was like when he was incontinent. The first day he was in the neuro unit, he wet the bed. Because I was there I changed his sheets. When I left him that evening I remember saying to my Mum that I was worried he would lie in a wet bed all night. When we went in at 9 o'clock the next morning you could see dried urine on the top sheet. I thought, 'Even if you haven't got time to change everything, you could at least have put a clean top sheet on so that I wouldn't have known'!

*PF:* How did you cope when things like that happened?

*Jane:* I just thought I've got to get on with it and do it myself.

### Dignity

*Jane:* The next day when I came in he had on a 'convene' catheter, and somebody had put him in a pair of 'netelast' knickers. He was padded up to the eyeballs and I just thought 'how undignified'. Later, the nurse who I liked who recognised his stiff neck said, 'Gosh, I don't know who put those on him, but I've taken them off'. He was still a person. He had dignity. She recognised that, whereas somebody else hadn't thought and had just padded him up and put those horrible things on him.

*PF:* Was that something that bothered you; his dignity? Did you feel that it had been stripped away from him?

*Jane:* Yes. As a person he was a very clean and took care of his appearance. To see him not shaved ... if it was his choice, it was OK. I asked him one day, if he wanted a shave, and he said no, which was fair enough. Most of the time I don't think he was even asked. And I know he went without a wash quite often. For him not to be treated with dignity was a big thing that affected me.

It was almost as if, because they didn't think he was going to survive, it didn't matter. You know, it didn't matter about giving him a wash. It didn't matter that he was put in 'netelast' knickers. I mean, he wasn't really in a position to say, 'Don't put them on', because if he had been, there was no way that he would have let them do that.

*PF:* If you could feed back one thing to them that you felt was really important what would that be?

*Jane:* I think above everything else I would like to have known that they had done everything that they could for him to be pain free. After that I think it would have been nice for me to have known that they had done everything they could to help him, and if that meant that he couldn't survive then to make him comfortable and pain free. To have treated him with dignity. I don't think that happened. It was almost as though, because he couldn't really talk for himself, he didn't matter.

### Coping

*Jane:* I look back at it now and think, 'How did I do it?'. Nine days of going in and coming out. It was really stressful. I couldn't stay with him very long when I was there. All I could do was to sit with him and talk to him. I used to do other things as well, like checking he'd had his painkillers. I would often look in the drug chart – and it's a good job I did because there would be doses of nimodipine that weren't signed for, or I'd go in and find them on his locker! Well, there was no way he would know to take them. But because I could do that I felt useful.

I also did practical things, like changing his sheets if they were dirty – just trying to make him comfortable, and feeding him. Nurses would come up to me and say, 'Is Steve eating today?'. I'd say, 'Well I don't know, you





tell me'. They wouldn't know. Other times, when they knew he was eating, nothing had been ordered for him! I felt that if I wasn't there he wouldn't have been fed. I knew that while I was there he was getting fed, he was getting his painkillers and that he was comfortable. But I did feel helpless.

### Going back to work

**PF:** You were strong and went back to work in the intensive care unit, where Steve was admitted. What was it like going back to work?

**Jane:** Very hard. Before I started work, when I first came back I couldn't even make myself walk onto the same floor as ICU. It was too much. When I could walk onto the unit, as soon as I saw Steve's room, that was it. I couldn't go into that room. I knew that before I could go back onto the unit for a shift I had to get over that.

The hospital chaplain helped me. She came with me. We went in the cubicle and closed the doors and we were in there for quite a long time. She said, 'You can see him in that bed, can't you', and I could. That helped me a lot because I wasn't under any pressure; there wasn't a patient in that bed, with me falling apart. I could just spend time in there.

It took me a long time to be able to go into that room when a patient was in there, because I could picture it being Steve. I found it hard for months. My heart wasn't in the job. I went to work, did my job and came home. It was just a way of filling in the time.

But I always knew I would get through it. Jerry (the senior ICU consultant) had said that I might find that ICU wasn't for me anymore. But I always felt that once I'd got over things a bit more that I had something unique to offer relatives. Because I've been through it, and although you can't say (to relatives) it's all right, I know exactly what it's like. I've got a lot more insight into what they were going through and I feel that I have got something to offer them.

Although it's difficult, I can cope with ICU on a daily basis. If somebody comes in with a sub-arachnoid haemorrhage or if somebody has to be told bad news, I've found that very hard. Not because I was told the same – because I wasn't – but because I'm thinking, 'I know what you're going to go through now'. Before I always felt sorry for the relatives but I never saw what was going to happen to them after ICU. It was always really sad what was happening in ICU, when the patient was dying. Whereas now I think, 'God, what you have got to go through in the next few weeks'. I feel for them because of that. At the time, you think that the day that person dies is the worst day of your life. But it's not. I know it's not. It gets a lot worse. You have to adjust to him not being there. I feel for the relatives because I know that they've got to go through that pain.

It is so final. It is so hard. For example, I would think, 'This time last week Steve was up and about and he was fine, and now he's dead and he can't be dead'. It's accepting that he is and that he can't come back, that it is absolutely final.

With relatives (when somebody is dying) you haven't

got to say anything. Sometimes you think, 'Oh, I must say something'. But that's not so. The last thing I wanted was somebody putting their arms around me saying, 'There, there', and that sort of thing. Just knowing that you're there if they want you is enough because you don't know them, you don't know the patient – they do. It's an insult if you try taking over, but just to know that there's somebody there if you want them is really important.

**PF:** Your experiences with Steve seem to have enriched you in a way in that you can now bring to your nursing. You clearly feel that you can give that much more to the relatives.

**Jane:** It's about having total respect for the patient. I haven't had to lay out anybody since Steve died but I know if I did that would be such an important thing to me ... and to make sure that it is done with dignity. I know it is usually done with dignity by nurses, but it's so important. I wanted Steve to be treated with dignity and gently and I know that that is how I would treat the patient as well.

**PF:** You were very pleased with the care that Steve received when he was in your own unit. Having had these experiences and now having a much better idea of what it's like to be on the receiving end, how do you feel about the colleagues you work with? Obviously some are better than others: in the way they interact, in their nursing care, and the care they give to relatives. How do you tolerate those who, perhaps, aren't performing in the way that you'd like?

**Jane:** Fortunately I haven't come across an incident where somebody has been really badly treated. If I did see somebody being treated without respect I'd say something, and I would have to refer to the fact that I've been on the other side. How would they feel if it was one of their relatives being treated like that? You do become blasé. Day in, day out, another patient who's ventilating ... you don't think of that person as somebody's husband or wife. I would have to say something.

It would have more effect if you could say, 'Look, I've been on the other side and my husband was the patient'. I think it would have more effect on somebody to change the way they give their care, if you could relate a personal experience.

I know a lot of good nurses on ICU but the ones I tend to think of who are really excellent at their job are the ones that attend to the patient as a person; those whose patients are really looked after well, as far as they're clean and things like that. That's the thing ... I mean I know you have to have knowledge about ICU but I think what makes a nurse really special is her attention to detail; the way she talks to a patient. For example, everybody says, 'We're going to turn you now', and that sort of thing; it's automatic. But some give that little bit more and talk to the patient as a person. I think that makes the difference really.

**PF:** One of the reasons for this interview is that you wanted people to be aware of what you went through so



that they can learn from your experiences. Obviously this is one of the things that you felt very strongly about doing. How else have you coped?

*Jane:* The people from work have been brilliant. Before I came back to work a lot of them came to see me. It was my birthday shortly after Steve died, and they remembered. I was sent this huge teddy bear – they said like they couldn't give me a cuddle so they were sending me the next best thing. I was sent flowers while Steve was in the neuro unit, and it was nice because they wrote, 'From all your friends on ICU'. It didn't say 'colleagues', it was 'friends'.

When I came back to work, it was on a supernumerary basis. They were fine. If I only wanted to stay half an hour it was OK. I had lost all my confidence but they were really good with me. They would say, 'Something's going on in here, come and help', but they wouldn't leave me on my own. If there was any situation that I couldn't handle, that was fine; they were very good in that way.

### Counselling

*Jane:* I had counselling. One afternoon (before returning to work) when I was particularly at my wits' end I went to Occupational Health and they got me the chaplain. I didn't really want to see the Chaplain – there had been a really nice Chaplain but she'd left – they said the new one was really nice, but I didn't know her. I didn't really want to speak to her but I hadn't the heart to say no. As it was she was really good. She was the one who came up to the unit with me when I went into Steve's cubicle for the first time. She was very helpful and I saw her a couple of times, but then it got to a point where I needed something more. She had given me as much as she could. I saw the occupational health nurse on ICU one day and she suggested I try counselling. I went for counselling a few times but it felt very strange because I had been taught counselling skills.

*PF:* So, did you find yourself analysing what she was doing in her counselling role?

*Jane:* Yes, and initially she didn't ask me what I'd come for. We had to go through things like childhood and schooling. You just sort of think, 'Oh, yes I recognise all of this'. But she was very good because although I'd always needed to talk about Steve I couldn't talk about the things that were very painful. I felt a lot of guilt that I hadn't recognised Steve was having a brain haemorrhage. She made me face up to that. It was horrible doing it, but I needed to. Otherwise I was just keeping it under the surface. It was always going to come out but she did it in a controlled way. She made me face up to the things that weren't very nice. With friends I could talk about Steve – but only nice memories and that sort of thing.

### Grieving

*Jane:* A lot of the time I grieved on my own because I think it's a really private thing. Normally, I try my hardest never to cry in front of somebody. It's funny because when you are upset, if somebody says, 'Have a good cry and let it all out', it's the surest thing to stop you crying.

My Mum never knew what to say, so she always said, 'Have a good cry'.

A lot of the time I was on my own. Although that was horrible at least I could let it all out, and I didn't have to comfort anybody else because they were upset. I didn't have to worry about anybody else being upset by my crying, so I spent a lot of time on my own.

I couldn't accept that Steve wasn't coming back. I really thought it was going to be different. That's how I got through the funeral. I just kept thinking, 'That's not Steve in that coffin', and I was so in control. I kept thinking, 'How am I so in control when everybody else isn't?'. I was comforting everybody else. I was just so convinced that he was coming back. I thought, 'Right, I'll stay here for a while (Steve was buried in his home town) with my family and friends and then when I go back home he'll come back'. That's what kept me going.

Several months later, when I realised that he wasn't coming back I hit rock bottom. All the way through I'd grieved for him but I'd always kept a little bit back, and that little bit seemed to build up and up. I had to get away.

### Saying goodbye

*Jane:* We had scattered Steve's ashes in the Lake District and I knew that I had to get away and go up there. My mother came with me and it was only then after going there that I accepted that he couldn't come back.

I don't know what happened up there. I'm not a religious person but it was a really spiritual thing. I really felt as if I was having a conversation with him and he was saying, 'You've got to carry on. Wherever you are I'm with you but you've got to carry on'. I think that helped me to accept that it was final and that I had to look ahead, whereas before I'd been looking back. Once I started to do that I started to enjoy my job again, and although it still wasn't wonderful I felt as if it had more meaning. I felt as though I had got more to offer, whereas before I didn't really think I was much use. I was letting go.

### PROFESSIONAL COMMENTARY

Jackie Creasey comments on the nursing care Steve received, focusing particularly on Jane's relationship with Steve's carers:

The amount of research evidence available which centres on the experience of the family is constantly expanding. A small number of studies (Creasey, 1996; Chesla and Stanard, 1997) identify negative experiences of care giving that are similar to those made explicit by Jane's very powerful account of her experience. The lived experience is gaining more credence as a way of evaluating care. It is a more sensitive indicator that enables nurses and other healthcare workers to reflect on their care giving and begin to consider what implications it has for both the family and patient to whom they have a duty of care.

Jane's story vividly describes her experience, both from the perspective of a caregiver who has a nursing knowledge and that of a stakeholder i.e. a receiver of care. She quite clearly identifies pre-existing expectations and



wants the best possible care for Steve. By recognising and placing value on maintaining the centrality of stakeholders in the improvement of the service through negotiation, Koch (1996) would support our view (see introduction, above) that we can learn from Jane's account and respond by making changes to care giving.

Some of the key issues that stand out from the final part of Jane's story are: how Steve was treated and cared for; lack of recognition of him as a person; Jane's need for openness and honest information, recognition of her feelings, and privacy at specific times; the inadequate facilities of the environment for family members; the ineffective communication and interpersonal skills of members of staff; imposition of rules; and the stresses of the experience.

Jane's devastating experience was made more stressful and less bearable by the actions of different members of health care staff. She has been left knowing that Steve was not provided with the best possible care available and wonders whether the actions of staff had a detrimental affect on his wellbeing: "Steve was frequently missing doses of nimodipine". She had to act as his advocate on a number of occasions, intervening with care when she felt he had been neglected: "I just thought I've got to get on with it and do it myself". She describes her feelings of helplessness and the worry of what was happening to Steve if she was not there. She talks of her lack of confidence and faith in specific staff and clearly identifies her priorities of care for her husband.

This account reflects findings in earlier studies (Coulter, 1989; Freichels, 1991; Dyer, 1991; Pelletier, 1993; Millar, 1994; Wilkinson, 1995; Creasey, 1996), which identified the need for information, assurance and honest information. In the integrative analysis of the Critical Care Family Needs Inventory (Molter and Leske, 1983), to have questions answered honestly was placed as the most important need. Using a revised questionnaire O'Neill-Norris and Grove (1986) established that key nursing behaviours identified by the family focused on honesty, information, caring and hope.

Wilkinson (1995) recognised the need for a caring environment and an atmosphere that supports friendliness. Additionally, Beeby (1995) proposed an essential structure of caring facilitated by nurses (supporting the family, getting to know each other, being human, explaining what it all means, being expert). In studies by Wilkinson (1995) and myself (Creasey, 1996), competency and expert care are recognised by family members. In Jane's experience there is compelling evidence that demonstrates a lack of caring, friendliness, competency and expert care.

This story emphasises the need for personal involvement by nursing staff i.e. more than a physical nursing presence, as recognised by Walters (1995). It also supports the need for both commitment and involvement, and has similarities to the findings from my own research (Creasey, 1996). Therapeutic work was not identifiable from this account and personal relationships between Jane, Steve and the nursing staff were limited; care was not personalised. It was not specific to Steve and it is clear from Jane's account that his dignity was not maintained. These factors contrast with my research findings, established in a

unit where primary nursing was the approach used to organise nursing care (Creasey, 1996), and in which family members viewed this aspect of organising care in a positive way. Until recently none of the research literature explicitly discussed negative effects of care giving with family members of patients within an intensive care setting. My phenomenological study (Creasey, 1996) provides examples of negative experiences described by family members. These were found to centre around: communication; interpersonal skills; missed cues; insufficient explanations of management plan; limited negotiation of care between care givers and family members; and accountability. In a later study, Chesla and Stannard (1997) identify five general nursing approaches which constrained family care: distancing the family physically from the patient and the patient's bedside; distancing themselves from the patient and the patient's family; characterising the family's perspective as pathological; dissipating responsibility for family care; and taking an elemental rather than a systemic perspective. Both of these studies reflect similar features to those expressed by Jane.

In order to address the issues raised above, it is necessary to identify the essential features of nursing quality. In a measurement of patients' satisfaction with nursing care, Thomas and Bond (1996) found that although there is a wide variety of patients and research methods, there is a degree of congruency in features of quality identified. These include the nurses' manner, provision of information, maintenance of patient individuality and nurses' clinical competence. Using this analysis it can be identified that these features are negatively portrayed in Jane's account of the neurological high dependency and intensive care unit.

Greeneich and Olson Long (1993) describe a model that may minimise some of the negative effects of care giving. This may be useful in acting as an aid to planning preventative management by identifying critical juncture incidents, recognising the fit of personality characteristics, identifying caring, demonstrating proficiency, assessing family expectations and evaluating the nursing environment.

Unfortunately, none of the experiences identified by Jane is unique. However, her evidence should trigger health care staff to examine their own practice. In order to promote change, health care staff can now use family members' experiences as a catalyst to work towards providing family-centred care through expert practice, where personal involvement and therapeutic relationships play a central role in an environment which is supportive of family needs. This may challenge the *status quo* of clinical management, organisational approaches and the established culture of some individual units. It has implications for education in development of interpersonal skills, positive communication techniques and a philosophy of caring which places family centred care within the context of intensive care.

### **Continuity of care, primary nursing and person-centred nursing**

Kim Manley considers different approaches to nursing care:



When continuity of care was raised as an issue, the response by Jane was "There wasn't any! I think it was primary nursing that they were supposed to practise, and the nurse who was Steve's named nurse was one that I didn't like ..."

Within Jane's short response not only are key issues linked – continuity of care, primary nursing and named nurse – but also expectations and disappointments are evident. She felt that because primary nursing was practised, there should have been continuity of care; she would have preferred to have liked the named nurse allocated to Steve but in fact she did not. Certainly being a named nurse or primary nurse for a patient and family is a privileged position but one which is also daunting, requiring careful preparation but more importantly, structures for providing high support and high challenge. It is through this latter mechanism – namely clinical/professional supervision – that both primary (and associate nurses) are enabled to achieve greater effectiveness in their daily struggle to provide person-centred care to patients and families experiencing extreme life crisis. So, although as readers we may feel angry at the apparent lack of caring experienced by Steve and Jane, it is important to understand that the systems we all work in, accept, and are socialised into daily will not change unless we highlight the contradictions that exist, as well as create trusting relationships which enable us to support and challenge each other.

### The links between the concepts

Named nursing first arose within the Patient's Charter (Department of Health, 1991). It was an initiative intended to be implemented within a short period of time. Primary nursing, team nursing and individualised patient care are ideas which have been in existence since the 1970s and they preceded the concept of the named nurse. Wright (1992) argues that primary nursing is the most highly developed form of named nursing. However, due to the style in which named nursing was introduced – mainly very quickly and in 'top-down' fashion to fulfil the political agenda (Cole and Davidson, 1992; Dooley, 1999) – it is not surprising that some nurses may have only taken on board the superficial trappings of the concept, without exploring its essence. This essence is concerned with what it means to be a critical care nurse: our purpose, as well as how we achieve that purpose and how we practise nursing. Such values and beliefs are an essential foundation to developing a common vision – one that is owned. There are differences between what we believe in and say we do, and what we actually do; but only after making clear our values and beliefs can the contradictions that exist be identified – only through enlightenment can we be enabled to change our practice (Manley, 1999).

Continuity of care is a complex concept (Manley, 1997) – it can mean continuity of interventions and/or continuity of provider, where the relationship itself is as important at the interventions. Even within non-nursing quarters the power of the therapeutic relationship is recognised as enhancing the effects of interventions by having a 'placebo' effect (Mitchell, 1995).

Primary nursing is one mechanism for maintaining continuity of care. Assuming that primary nurses have mechanisms and opportunities for improving their effectiveness – which does not appear to be the case in this scenario – there may be problems within critical care when the primary nurse is off duty. Careful thought needs to be given to who the associates are, how the plan of care is communicated, and how all health care providers can be involved in contributing to and implementing the plan. The point about associate nurses became a major concern in a study I was involved with, implementing primary nursing in 1987 – where patients were designated a primary nurse but received care from about 15 different associate nurses. One contribution from a patient about this experience stays with me today. This patient had a tracheostomy and was receiving intermittent ventilation – she beckoned me over and wrote a message on a piece of paper:

*"Whilst I very much like having my own prime nurse – is it possible to have maybe a team of three/four other nurses for when my nurse is not here?"*

Hence, through learning from this experience and working with others to later implement primary nursing again (Manley, 1994; Manley *et al.*, 1997) it was identified as important that primary nursing was organised in teams from within which a designated primary nurse was identified for each patient. Such developments were based on very clear values and beliefs about nursing, teamwork and change, and were explored extensively over a long period of time. To choose to work in this way had implications for off-duty rostering. To enable each team to be self-sufficient in their provision of care, team rostering and self-rostering were introduced. The point to make here is that it is important for nurses to explore their values and beliefs as this will enable them to develop their direction in terms of the changes they want to make in their practice, as well as enabling them to put these into practice. In the situation involving Steve and Jane we do not know how named nursing or primary nursing had been implemented. There does not seem to have been internalisation of these values in the way that nursing is experienced by Jane.

Primary nursing is both an organisational approach – a way of matching nursing staff to the care of patients – and a philosophy of nursing associated with core values and beliefs, central to which is the importance of the relationship between the nurse and the patient, and the concept of 'knowing the patient'. Knowing the patient, in intensive care nursing, has been linked to improved outcomes, such as the length of time weaning off a ventilator, and length of stay within intensive care (Jenny and Logan, 1992; Tanner *et al.*, 1993). Knowing the patient is about knowing the person, a tenet of expertise in nursing practice necessary for skilled clinical judgement (Tanner *et al.*, 1993), and the picking up of subtle changes in the person. Pivotal to these concepts is the relationship. Using Ramos's (1992) classification, the relationship of nurses with Jane and Steve appears to reflect a minimal relationship where knowing the patient does not seem to



be a characteristic – such relationships may be associated with patients who are unconscious or strangers, or alternatively, where there is insufficient time, or lack of commitment to knowing the patient. Commitment, together with compassion, competence, confidence and conscience are the manifestations of human caring highlighted by Roach (1992). Morse (1991), in relation to nurse-patient relationships, argues the importance of commitment and demonstrates how in connected relationships nurses first view the patient as a person. Skilled companionship and being there for the patient and their family are central to nursing's caring intention (Titchen, 1996; Johns, 1994).

Fosbinder (1994) identifies key interpersonal characteristics possessed by nurses in developing relationships with patients, from the patients' point of view. Four key processes resulted: establishing trust, translating and interpreting significant events, getting to know the patient, and 'going the extra mile'. These are processes which can be learnt, but the commitment to developing them rests with having a person-centred vision of nursing.

It is recognised that values alone are insufficient – but such values do need to be explored and made explicit because there will always be organisational implications which have to be considered, if values are to be lived. Thus, implementation of mechanisms for providing high support and challenge to facilitate personal and professional effectiveness via supervision is an essential prerequisite. Also, there are more practical issues to be considered, such as off-duty planning to facilitate each team's flexibility to provide continuity of care.

Many practitioners, unless working in supportive and challenging environments, will fail to recognise and become aware of the contradictions within their practice. Certain values may be espoused but the contradiction is, that these values are not seen enacted in practice. Contradictions to the observer may be evident, although not to the practitioner. This is why clinical supervision is so important in helping people to develop insight into where these contradictions are, overcoming them through action and becoming more effective in their practice.

Primary nursing as rhetoric and as experienced by Jane is very different from primary nursing as reality. Primary nursing requires a lot more than just using the label of named nurse or primary nurse. It involves getting under the meaning of the terms, exploring what this means for nursing, living these values and putting them into practice. Certainly if the values underpinning continuity of care and primary nursing were owned as being central to nursing's caring intent, then they would have been more evident within Jane's experience of being a recipient of nursing. However, the leadership or managerial approach within this unit is not known; it can only be conjectured. To practise in a way that is person-centred requires enablement and support from management and a shared vision of what the service is trying to provide as well as nursing's contribution to that service. The nurse in this scenario may well have felt powerless and unsupported, although none of us are in fact powerless. It is the commitment to, as well as opportunities to reflect on such situations within a culture that fosters and nurtures

learning, enablement and action that will enable us all to change positively.

### Communication and quality of care

David Langford comments from the point of view of the chaplain's role:

This commentary is based on my experiences of observing and supporting families in ICU over the last seven years. The quality of support given can drastically affect the families' ability to cope with the crisis as it develops and the grieving process. Jane's story is a graphic account of an able ICU nurse, suddenly finding herself the distressed wife of a dying patient. The support given ranged from good to variable and poor. It made a stressful situation more difficult to cope with, the grieving process more complex and the emotional and spiritual pain sharper.

The two particular areas I would focus on communication and quality of care. Honest, open communication can quickly establish a relationship of trust, even if the news is not good. To fail to do so is to forfeit respect and credibility. As Jane herself stated: "I really do believe that they knew from the start that Steve was not going to survive and I think they should have told us that ... I've got no respect for them because they didn't tell me the truth" (Fulbrook *et al.*, 1999). Communication is conveyed not only by words, but by attitude and non-verbal responses, as Jane's experiences show. The contrast in her experience is clear. The health professionals in her own unit, known and trusted, communicated well, compared with the mixed messages and reluctance to give clear information in other units.

Chesla and Starnard's (1997) studies show five nursing approaches that can lead to the breakdown of the nursing care of families in ICU. These include distancing the family physically from the patient, and themselves from the patient and family, with unclear lines of responsibility for family care. Factors that can lead to such a breakdown include gaps in education and skill in working with families, personal emotional factors, and insufficient support and supervision for this difficult emotional work of family care.

One of the most disabling experiences of such a crisis is the loss of control and sense or unreality. Good communication of current information, and sensitive support and listening give a measure of control. Jane's recurring intuition was "I knew he was going to die". She was made to feel that she was in unreality. In fact her instincts were right. Better communication would have helped her and the family to adjust to the developing situation and the grief it brought. Dr Rob Buckman's six-stage protocol in the breaking of bad news includes, finding out how much the patient/family know and want to know, sharing of information appropriately, responding to feelings and regularly updating (Buckman, 1992). All of these help with the first stages in the bereavement process. These are coming to terms with reality – what is happening – and expressing the feelings it provokes. Jane's grieving began when Steve had the haemorrhage. She experienced the loss of an intelligent, loving, healthy



husband. During the uncertain days that followed, she experienced and anticipated his deterioration, his death and the loss of their future together. Good communication and support would have helped this process become more endurable. As Jane stated above, "The female doctor ... really communicated with us ... if she had been involved from the start it would have been more bearable. I would have had more faith in them".

The knowledge that the care is good is a great comfort to the family during the grieving process. In Steve's case, quality of care was lacking in many ways. Jane was thrown back into her nursing role, even to checking and giving drugs. This undermined her emotional base. If good care was being given consistently, she could have been involved in his care as a wife. As it was, she felt he was deprived of dignity, care and respect. There is a search for meaning, and a need to make the death significant, which were frustrated here. It could be that the staff felt threatened by Jane being an ICU nurse and it affected their care.

When communication and care are good, important emotional and spiritual issues can be expressed, unfinished business addressed and coping mechanisms affirmed. As Faulkner (1995) writes:

*"It has been shown that if the dying person and those they care for can accept the impending reality of death, then the grieving for the loss of the beloved is more likely to fall within normal parameters".*

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# Exploring the expanded role of nurses in critical care

Martin Hind, Dawn Jackson, Clive Andrewes, Paul Fulbrook, Kathleen Galvin and Susan Frost

This paper reports on a small research study that explored the perceptions of staff in an intensive/coronary/high-dependency care unit on the expanded role of nurses in critical care. The research was undertaken in two phases.

In the first phase, focus groups and interviews of nursing and medical staff were used as methods to explore their perceptions. Data were analysed by thematic content analysis and generated four categories: specialized skills; maintaining competence; how far nurses can go; and training and education. Using verbatim examples from the participants, these categories are described. In summary, it was found that both doctors and nurses were in favour of nursing role developments, and for the nurses this was driven by their desire to meet the patients' needs.

In a smaller second phase, a questionnaire was developed based on information gained in the first phase. It was utilized to seek the views of all the nursing staff on *specific* role-expansion activities. Findings revealed substantial support for developing the role of critical care nurses in a number of activities: cannulation; venepuncture; ordering blood tests and X-rays; performing physiotherapy; inserting arterial lines; performing elective cardioversion; thrombolysis treatment and intubation.

This research study has yielded important information. However, it is recognized that, whilst these roles may be *new* to this particular critical care unit, there are many other units where they may already be common practice. Whenever new roles are developed, it is important to evaluate their effectiveness in measurable terms and regular audit is advisable. Further research is therefore recommended on both the development and evaluation of new roles in critical care.

## Introduction

A variety of factors have contributed to the changing role of nurses in critical care environments. The United Kingdom Central Council's 'Scope of Professional Practice' policy (UKCC 1992) liberated professional nurses in practice from previous rules which had limited the activities they could undertake outside basic nursing. In addition, the report entitled 'Junior Doctors the New Deal' (NHSME 1991) initiated the reduction of junior doctors' hours and the Calman Report (DoH 1993) recommended shortening specialist training for doctors. These developments have influenced a change in the traditional boundaries of nursing, where nurses can now add to their core skills and develop their practice and

so enable them to become more responsive to changing patient need. It has also raised awareness for the development of new nursing roles where nurses will be expected to be flexible professionals who are willing to develop in response to changing demands in practice. Arguably, this has led to a blurring of role boundaries as nurses may now undertake many aspects of what was previously considered medical practice in critical care areas. Endacott (1996) argues that it is crucial that any alterations to the nursing role preserve the essence of holistic nursing practice and that the drive to acquiring medico-technical skills in intensive care is to the detriment of defining the unique identity of an intensive care nurse.

Albarran and Whittle (1997) suggest that the development of specialist and advanced

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practitioners should be independent of changes resulting from reductions in junior doctors' hours. Neenan (1997) argues that nurses' roles in critical care are already expanded more than in other areas of nursing, for example, in relation to advanced life-support skills and invasive cardiac procedures.

But as Bowler and Mallik (1998) warn, legal issues associated with role expansion in intensive care need addressing. These concerns have also been raised by Dowling et al. (1996), who stressed that confusion about accountability is possible when nurses take on junior doctors' work. As the nursing budget accounts for three-quarters of intensive care unit costs, nurses are under increasing pressure to justify their value in the healthcare market (Woodrow 1997).

Within this context of changing roles, there is a need for further research into role-expansion in the critical care setting. This study was designed to explore the views of staff in one critical care unit.

## Background

The setting for this research was the critical care unit (CCU) of a large district general hospital. The facility comprises an eight-bed adult intensive care/high-dependency unit, of which five beds are intensive care and three are high-dependency care, and a six-bed coronary care unit. In addition to serving local demands, the CCU provides for a large seasonal population of visitors and tourists and admits patients from other trusts in the region when bed shortages occur. It offers a flexible facility, catering for patients with all types of disease, and averages around 1700 adult admissions per year.

A clinical director and a business manager within an anaesthetic directorate manage the CCU. On a rotational basis, three consultant anaesthetists for intensive care and high-dependency care and two consultant cardiologists for the coronary care unit share the responsibility for the day-to-day management of patients in the unit. At the time of the study, the total nursing staff complement for the CCU was 50 whole-time equivalents, consisting of one senior sister, three sisters, twelve senior staff nurses, and grade E and D staff nurses. The unit is supported by a full-time technician and a part-time clerk. With the exception of the sisters,

**Table 1** Open questions used during focus groups/interviews

Interview guide

Nurses:

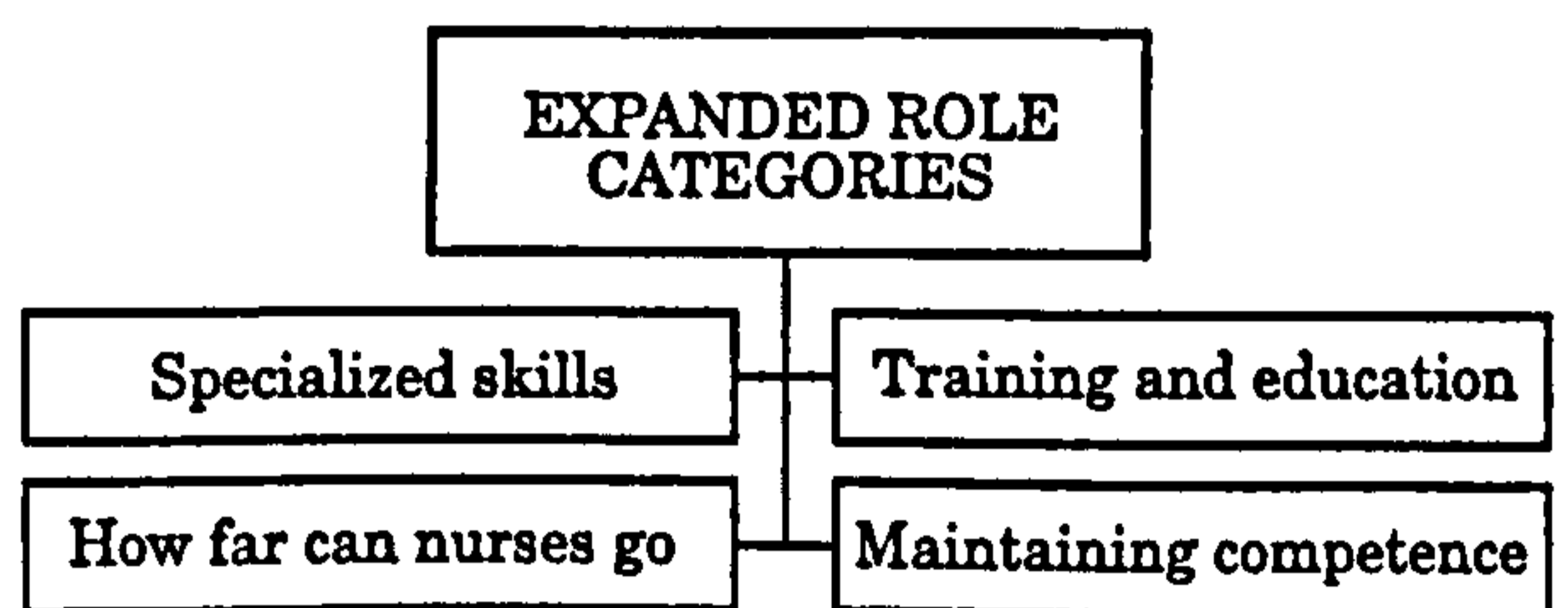
How do you perceive the roles of different groups of staff in ITU/CCU?

What would you like to take on that other professionals currently do?

Doctors:

How do you perceive the roles of different groups of staff in ITU/CCU?

What are the advanced specialist skills that nurses may undertake?



**Fig. 1** Categories that emerged from phase 1 data.

who are based in a particular unit but maintain overall managerial responsibility for the CCU, all nursing and support staff work in both units on a rotational basis. Education within the units receives high priority and in-house training is provided for all junior staff. Support and teaching is also provided for post-registration students undertaking the English National Board Course 125 (ENB 125) (Intensive and Coronary Care Nursing) and ENB 100 (Intensive Care Nursing) courses, and pre-registration students undertaking diploma- and degree-level training.

## Aim of the study

To explore the current role of the critical care nurses and the potential to expand their practice.

## Methods

Data collection for this study was undertaken in two phases. In the initial phase, a qualitative approach was taken. Focus groups and individual interviews were used as methods to explore participants' perceptions of expanded roles in the critical care setting. The focus groups



**Table 2** Expanded role activities identified from phase 1

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Cannulation
Venepuncture
Male catheterization
Requesting blood tests and X-rays
Performing physiotherapy
Inserting arterial lines
Performing elective cardioversions
Performing diagnostic ECGs and administering thrombolysis treatment by protocol
Performing intubation
Re-positioning of pulmonary artery catheters
Insertion of double lumen catheters for haemodiafiltration
Insertion of central venous catheters

---

were used to obtain data from nurses, and individual interviews were undertaken with consultant anaesthetists and cardiologists. Eighteen nurses, representing all grades and five consultants were involved. The focus groups and interviews were semi-structured, following a similar format (see Table 1). Open questions about how the staff perceived current nursing roles and what areas/advanced skills nurses could move into/acquire were asked. Freedom to explore and probe was considered essential in order to obtain personal opinions, full information and for clarification of relevant issues.

Thematic content analysis of the data as described by Morse (1994) was used. The transcribed data were openly coded and organized into a conceptual framework of categories (Fig. 1). These findings were then discussed in the light of existing literature.

Subsequently, a simple questionnaire was developed to seek the views of all the nursing staff in the unit on potential role expansion. The questionnaire was designed on the basis of the findings and discussion of phase one, focusing on the activities that were identified as potential expanded roles (see Table 2). This was important to ensure that all staff were included in this study. Some of these activities were already being practised by some nurses whilst others were entirely new.

The questionnaire asked nurses if they felt that it was appropriate for them to perform these activities. They were also asked to place them in order of priority, enabling a hierarchy of preferences.

The questionnaire was distributed to all nursing staff in the CCU ( $n = 48$ ). All participants in the study were assured that confidentiality and anonymity would be maintained, data that were tape-recorded during phase one were erased once they had been transcribed. Informed consent was sought throughout the entire process and for phase 2 this was expressed through completion and return of the questionnaire.

## Findings and discussion

### Phase one

This section of the findings describes the data collected from the focus group discussions and from the individual interviews and it is organized according to the categories that emerged from the data (Fig. 1). The findings from this phase tell the story of how staff members perceive their own roles and what support is needed for them to enhance their practice, benefit patients and develop the critical care team.

### Specialized skills

The data identified both core and specialized skills that were undertaken by nurses in the critical care setting. Individual skills depended very much upon the grade of the nurse, as did the level of new skills being developed.

All participants in this study discussed the need for nurses to undertake new skills and develop new roles in order to meet patient and institutional needs. All grades recognized the importance of acquiring new skills and maintaining competence in them to provide continuity of care for the patients. Many participants felt that time was often wasted in trying to locate a doctor or another member of staff to carry out a certain procedure, whereas if the nurses had the necessary competence, they could provide holistic care for their patients:

But I still think there is more scope for us and it would be nice to be able to provide that kind of holistic care for the patients without constantly having to go and find other people to do these things. (*nurse*)

If you are looking after that patient then you want to give them optimum care, you know about the patient you are looking after and rather



than go and have to collar someone else to do something that you could do, then it makes much more sense than having to take somebody away from their workload as well. (*nurse*)

The staff therefore argued that acquiring new skills was consistent with the need to preserve the essence of holistic nursing practice that has been asserted by Endacott (1996). The data show that these nurses articulated reasons to do with meeting patient need and becoming more 'complete' practitioners as the main rationale for acquiring new skills, even if this includes the acquisition of medico-technical skills that Endacott (1996) had argued was to the detriment of the uniqueness of intensive care nurses.

### **Maintaining competence**

Maintaining competence in new skills was felt to be vital by all of the focus group participants. For example, if nurses were taught how to insert central venous catheters, would there be ample opportunity for them to carry out this procedure to enable them to become competent and ensure the safety of patients:

You get the issue of practice, it is something if you are doing it very occasionally, how secure are you going to be at doing it. I know quite a few of the people who have been trained to venepuncture yet don't do it very often, so how good is their actual practice?. (*nurse*)

I have done cannulation but I don't feel very confident as I don't do it on a regular basis. (*nurse*)

Also, some participants expressed a concern about dealing with any complications after attempting new skills such as performing intubation, elective cardioversion, diagnostic electrocardiogram (ECG) with administration of thrombolysis treatment and insertion of central venous catheters or double lumen catheters for haemodiafiltration

It's all very well getting us to take on new skills and procedures but what happens if something goes wrong? Will we know what to do? A doctor is trained to know what to do ... who will be responsible? (*nurse*)

This view is consistent with the findings of Bowler and Mallik (1998) who found nurses in intensive care had concerns about their responsibility and accountability when problems arose with expanded roles. Being competent with a particular skill also requires the ability to respond to complications and this point was reinforced by one of the consultants.

Though probably, logically, if you are going to get them (nurses) to put in central lines without direct medical supervision or without immediate medical presence to hand then you have got to teach them to put in chest drains and to manage patients who may suddenly require ventilation because of problems associated with that. (*consultant*)

### **How far can nurses go?**

The best argument against the development of expanding roles for nurses is that of taking on the role of 'mini-doctor', with nurses undertaking procedures that doctors no longer wanted to do, rather than for the good of patients and the nursing profession (Leifer 1995; Ball 1997). Participants in this study explained that if they were to take on new roles, it had to be for the benefit of patients as part of holistic nursing care. Some expressed concerns over extending nursing roles and raised questions about 'how far nurses can go':

I think you have got to be careful how much you take on because otherwise you become a junior doctor, don't you, and I didn't train to become a doctor, I trained to be a nurse and I think the roles are very defined and very different although there is an overlap. (*nurse*)

I don't think it's right, junior doctors' hours are cut so we get more extended roles, no more pay though, we pick up the tasks they don't want to do anymore. (*nurse*)

### **Training and education**

Training and education issues were widely discussed in all of the interviews. The majority of nurse participants identified the need for training if new skills were going to be undertaken. However, views on the way in which the training



was to be delivered differed. Some participants, in particular junior grades, felt that being taught in practice by a professional who was proficient in a particular skill was the best way to learn; whilst others, both junior and senior grades, indicated that a more formal educational framework would benefit all staff. One area where all nurses felt they needed to expand was physiotherapy. They discussed the possibilities for undertaking passive exercises with their patients; ensuring continuity of care and being able to give physiotherapy as and when the patient needed it. Physiotherapists training nurses at the bedside, as well as more formal sessions, including anatomy and physiology, were discussed as options for education:

I think we need more training, especially for passive exercises. You do passive exercises with the physios but I don't think I know enough on the joints, where I should hold the joints ... whether I'm causing injury. I am not too keen really to do passive exercises on my own because I'm not qualified but I think the patients certainly do need them. (*nurse*)

Participants talked about the need for patients to have more individualized care when receiving physiotherapy:

I feel better training of ICU nurses to be competent at good physiotherapy would be very beneficial to an extremely sick ICU patient, because at the moment at best we have three-times-a-day physiotherapy. Some of these patients need hourly physiotherapy, if we were all trained and competent in doing it, then the patient would definitely benefit. (*nurse*)

Medical staff also discussed the importance of extra training for nurses undertaking new skills. Concerns were raised about how far nurses could go in respect of extending their role. However, it was generally felt that nurses should be taking on new tasks and receiving a high degree of both formal and informal training.

Shepherd (1993) warns that the adoption of an extended role can result in the nurse operating within a narrow remit delegated to, supervised and certified by another profession, which limits the individual's judgement and decision-making processes and also reduces the nursing profession's ability to define its own role. The data in this study imply that these nurses would

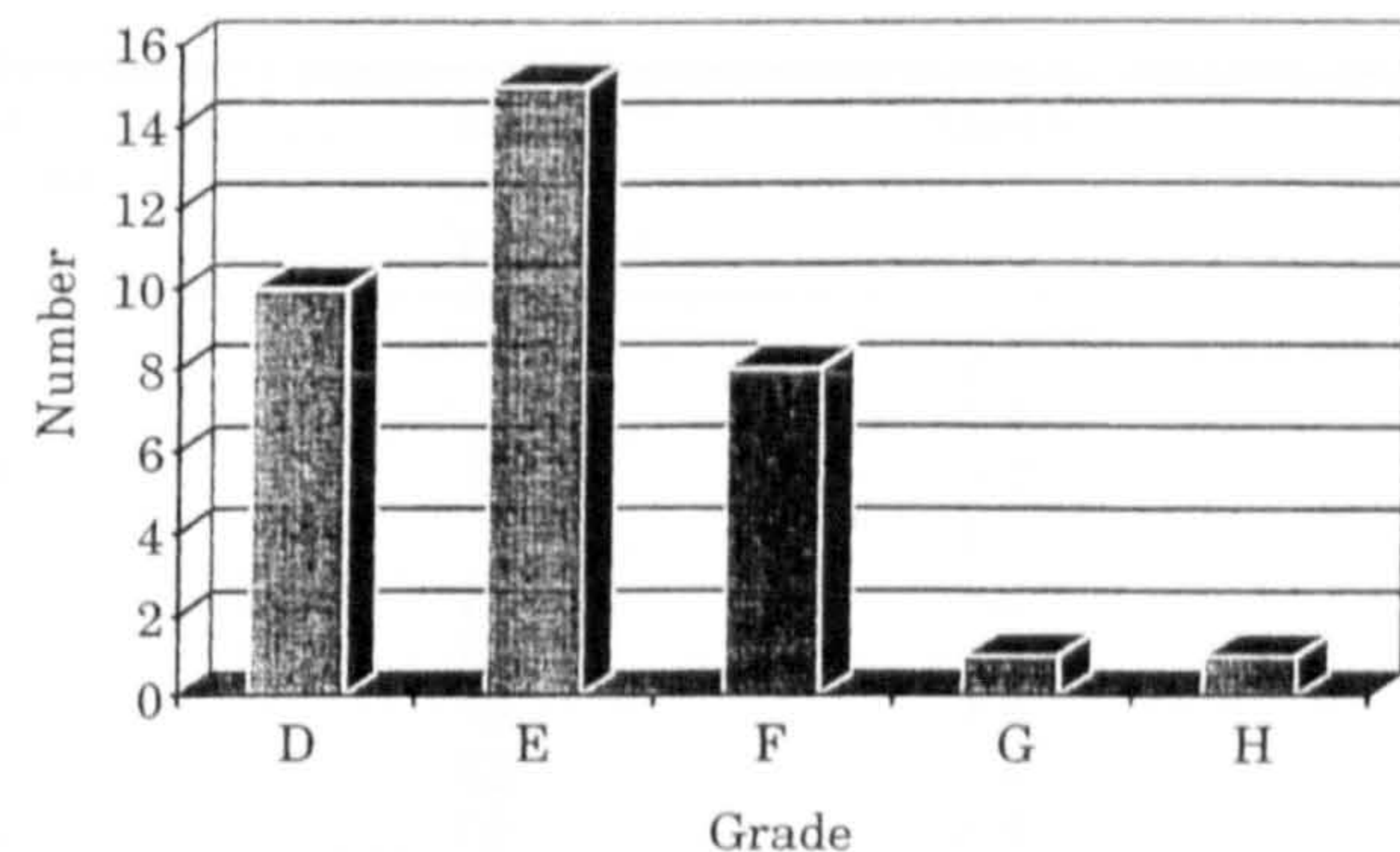


Fig. 2 Response by grade of nurse ( $n = 35$ ).

acquire extra skills but there is no suggestion that they would feel limited in the way that Shepherd suggests. This may be because the nurses saw these skills as expansions to their existing role, that they were driven by the desire to meet their patient's needs and that they felt it enhanced their 'holistic' approach to nursing care rather than inhibiting it. However, it may also be because they had not fully realised the implications, from a professional perspective, of extending their role and the autonomy issues involved.

### Phase two

A total of 35 questionnaires were returned (73%) and Figure 2 provides a breakdown of responses by grade of nurse.

The nurses were provided with a list of the activities and asked to rank them all from 1 to 13, with 1 being the most appropriate role to undertake and 13 being the least appropriate. Table 3 shows a summary of responses with the activities placed in order of preference with the most appropriate activities placed first. This hierarchy provides valuable insights into which activities should be targeted for the development of roles in the study setting. It does perhaps reflect the fact that cannulation and venepuncture, in particular, are already practised by some of the staff involved and so therefore all of the staff more readily perceive that these are areas for more immediate development. It is also not surprising that the more advanced tasks occupy the lower areas of the hierarchy as these were identified during the focus groups and interviews as activities that caused greater concerns in terms of competence, accountability and dealing with complications.



**Table 3** Expanded role activities in priority order (*n* = 35)

Activity	Min. rank score	Max. rank score	Mean
Cannulation	1	8	2.7
Venepuncture	1	8	2.8
Male catheterization	1	7	3.7
Blood requests	1	7	3.9
X-ray requests	1	11	4.9
Physiotherapy	1	11	5.3
Insert arterial lines	2	13	7.8
Perform elective cardioversion	3	12	8.3
ECG and initiate thrombolysis treatment	3	13	8.9
Intubation	3	13	9.5
Reposition pulmonary artery catheters	7	13	10.1
Insert double lumen catheters for haemodiafiltration	8	13	11.5
Insert central venous catheters	8	13	11.6

**Table 4** Responses to statement 'I think these activities should not be undertaken by a nurse'

Activity	Strongly disagree	Disagree	Agree	Strongly agree	No response
Cannulation	18	16	1	0	0
Venepuncture	20	13	1	1	0
Male catheterization	15	20	0	0	0
Blood requests	17	17	1	0	0
X-ray requests	17	16	1	0	1
Physiotherapy	11	20	3	1	0
Insert arterial lines	6	17	7	3	2
Perform elective cardioversion	7	17	9	2	0
ECG and initiate thrombolysis treatment	3	14	12	4	2
Intubation	3	10	14	6	2
Reposition pulmonary artery catheters	4	3	20	6	2
Insert double lumen catheters for haemodiafiltration	3	1	21	9	1
Insert central venous catheters	3	2	20	9	1

Whilst these hierarchical findings indicate a sense of direction in terms of which activities the nurses believe are more viable within expanded roles, it was necessary to ask the nurses more directly about these activities. Table 4 shows the responses of the nurses to the statement 'I think these activities should not be undertaken by a nurse', thus illustrating the strength of agreement towards each activity. This was a key finding as the main aim of this phase was to seek the views of all the staff. A comparison between these findings and the hierarchical table demonstrates that the nurses views were consistent, thus

strengthening the validity of these findings in terms of seeking a consensus view amongst the staff involved.

These findings show that there is strong support for nurses undertaking most of these activities with the exception of repositioning pulmonary artery catheters, insertion of double lumen catheters for haemodiafiltration and central venous catheters; few nurses supported these activities. The small numbers of nurses supporting these latter activities were spread across the grading structure and so the idea that the more senior nurses would be favourable



towards these activities is rejected. However, as there is some support for the development of these activities, they cannot be completely excluded from future developments to the role of the critical care nurse. In the more immediate future, though, it would be those activities that received strong support that would be worthy of developing for the nurses in this study setting.

## Conclusions

This study has found considerable support amongst nurses for role expansion in the critical care setting and has also generated valuable data for the specific development of the staff in the unit involved.

The findings of this study also serve to inform the debate about the current and future development of nursing roles in critical care. It is interesting that the nurses in this study placed a high value on such developments as a means to enhance the holistic care of their patients. This is a key point as the nurses did not perceive that they should inherit these roles as a natural consequence of the reduction of junior doctors' hours. Whilst it may well be true that the reduction in junior doctors' hours has influenced developing nursing roles, it appears that nurses do not see that as the primary motivator for assuming these roles. This study has found that responding to patient need is reported to be the strongest influence for nurses seeking new roles.

Indeed, the fact that there was evidence of nurses wishing to take over the role of other health care professionals (i.e. physiotherapists) indicates that this issue is not driven purely by changes to junior doctors' hours.

In order for nurses to undertake these expanded roles, there is a need for appropriate education and training to support these developments along with the need for on-going assessment strategies to ensure that individuals are, and remain competent in the performance of these skills. It is important to stress that these skills need to be practised frequently enough for the staff to maintain their level of competence, and further evidence will be needed to determine how frequently that is. It is also important that clear parameters for these roles are defined. What may seem like simple procedures to learn may not be quite so straightforward when the

foreseeable complications that might arise are considered; and being aware and informed of how to deal with these complications is vitally important. Identification of such complications requires good physical assessment skills.

Whilst it is not possible to generalize the findings of this small, single site study to other critical care areas specifically, these findings contribute to knowledge in this area and highlight the need for continued research into developing roles in critical care. Further research in this area might include on-going evaluation of developing roles in critical care, along with research that assesses the effectiveness of nurses in such roles, in particular with assessment of patient outcomes.

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## Physiological meas

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### Measurement

To measure is to determine the size or range of something. The result is a measurement that is accorded numerical significance to characterize the quantity of the object or thing measured. The tools that are used for measuring are described as instruments and are standardized to enable accurate comparison of measured things.

### Physiological data

The measurement of physiological data may be performed for many reasons in nursing, midwifery and health visiting research.

#### *Description*

Data may be collected for statistical analysis in order to provide statistics about a group of patients being studied. Mean body weight or blood pressure might be appropriate measurements to make. This type of information helps to give the reader of the research a clearer picture of its relevance to his or her own practice. In other words it assists with the reader's judgement of the generalizability of the findings.

#### *Relationship*

Physiological statistics might be further analysed in relation to other data collected and the group of subjects studied. For example, a group of 40-year-old men might be studied over a period of several years in relation to heart disease. By analysing body weight and blood pressure in relation to those who do eventually develop heart disease it might be possible to identify an *at-risk* group on the basis of either their weight or blood pressure, or a combination of the two.



### Response

Often physiological features are measured as a means of indicating the response to a controlled action. For example, heart rate and blood pressure changes might be measured in response to a standardized period of rest and used to indicate levels of relaxation. In a *controlled* situation the rest period would be described as the *independent variable* and the heart rate and blood pressure changes as the *dependent variables* (because it is theorized that they depend on the independent variable to produce a change).

### Comparison

Physiological measurements may also be used to enable comparison of 'like with like' which would be necessary if, for example, control groups were required for a clinical trial. Using the same examples of body weight and blood pressure – this time as a measure of success – a researcher might compare an innovative nursing strategy with a conventional nursing practice. An example is Naylor & Roe's (1997) research with renal patients requiring continuous ambulatory peritoneal dialysis. They compared two methods of catheter exit site dressing. Although the study was limited by the sample size (making statistical analysis inappropriate), they did obtain a clinically significant difference in colonization rates between the control and experimental groups. (This type of research is still valuable, however, as it adds to the body of knowledge – in this case, justifying the need to do further research in the area.)

A similar, hypothetical example would be a nurse on a medical ward caring for patients following myocardial infarction who felt that her ward's rehabilitation programme lacked adequate dietary information. Although it may only be a 'hunch', a dietary information booklet might be introduced to the rehabilitation programme of an experimental group of 30 patients with high blood pressure and obesity. Its effect might be measured and compared to a control group of 30 patients with statistically similar blood pressure and weight undergoing the conventional rehabilitation programme only. It may also be relevant to record other factors, such as age and gender, since there may be differences within these groups. These factors, which are not always controlled, are described as *subject variables*.

The degree of success of introducing the dietary information booklet would be judged according to the ability of statistics to suggest that the addition of the booklet had a greater effect.

### Controlled situations

It is important to note that the clinical setting rarely produces a controlled situation, since there may be many other phenomena occurring at the same time.



These independent factors are described as *extraneous variables*. For example, during a period of rest in a ward environment such as that described in the 'response' example given at the top of p. 338, there may or may not be a lot of noise, the patient in the next bed might be using a commode, or the subject may have slept very badly the night before. All of these factors might affect the person's psychological status, possibly affecting his cardiac response.

Unless the researcher collects an inordinate amount of *possibly* relevant environmental data (extraneous variables) it is impossible to state that heart rate and blood pressure changes (dependent variables) were in response to the rest period (independent variable) alone. Thus the scientific approach is to remove the subject from a relatively uncontrolled setting to a situation, such as a laboratory, where the environment can be better controlled. This approach is also limited, since the fact that the independent variable has an effect under laboratory conditions does not prove that it has the same effect in other circumstances. Thus, laboratory findings may or may not be generalized.

### Assumptions

There is also a danger when making physiological measurements that the researcher will fail to measure all relevant physiological parameters. It is possible that the rehabilitation study may find that the booklet was effective in producing a more significant weight loss. However, patients having lost weight might also be suffering from lethargy and general weakness as a result of eating much less, but since there was no mechanism in the research design to account for these phenomena they were not measured and might therefore go unnoticed.

There are clearly many research situations that require the measurement of physiological parameters. The importance of considering the environmental factors has been outlined, but equal importance should be accorded to both the method of measurement and the instruments of measurement. The researcher needs to know that the measurement procedure is appropriate and that the instruments used are accurate and measure what they purport to measure.

### Measurement process

This section details the process of making physiological measurements.

#### ***In vitro* and *in vivo* measurements**

Physiological measurements may be made either *in vitro* or *in vivo*. *In vitro* measurements are made away from the subject. An example of *in vitro* measurement is given by Smárson *et al.* (1997). They investigated abnormal production of serum nitric oxide in pre-eclamptic women. The sample was tested



after it was obtained. In this study, the process of collecting, storing and analysing the serum samples is meticulously described. *In vitro* measurements are frequently made in a laboratory, as was the case in this research example.

An *in vivo* measurement is made directly from the patient, and a value obtained at the time of measurement. Berry *et al.*'s (1996) study examined respiratory muscle strength in older people. Based on *in vivo* measurements they assessed: respiratory muscle strength (measuring forced expiratory volume in 1 second and forced vital capacity); fat free mass (measuring skin fold thickness and bio-electrical impedance); and hand grip strength (measured using a dynamometer). By comparing the results between younger and older subjects they were able to provide evidence that respiratory muscle strength declines with age.

The issues raised in this chapter are generally relevant to both *in vitro* and *in vivo* measurements. However, most nurses are likely to be more familiar with *in vivo* measurements, and may therefore be drawn to these types of measurements in their research. Some common examples of *in vitro* and *in vivo* measurements are given in Fig. 28.1.

Physiological parameter	Measuring instrument	Type of measurement
Blood pressure	Sphygmomanometer/stethoscope	<i>In vivo</i>
	Arterial catheter/transducer	<i>In vivo</i>
	Automated cuff machine	<i>In vivo</i>
Blood sugar	Glucose stick/glucometer	<i>In vitro</i>
Urine volume	Jug/weighing scales	<i>In vitro</i>
	Ultrasound	<i>In vivo</i>
Oxygen saturation	Pulse oximeter	<i>In vivo</i>
	Arterial blood gas machine	<i>In vitro</i>
	Indwelling arterial oximeter	<i>In vivo</i>
Tidal volume	Wright's spirometer	<i>In vivo</i>
Sputum culture	Culture plate/microscope	<i>In vitro</i>
Calf girth	Tape measure	<i>In vivo</i>
Nerve conduction	Peripheral nerve stimulator	<i>In vivo</i>
Plasma potassium	Laboratory machine	<i>In vitro</i>

Fig. 28.1 Some examples of physiological measurements.

There are several research aspects in relation to *in vitro* measurements of which the nurse researcher should be aware. *In vitro* measurements usually involve the taking of a sample from a patient for analysis under laboratory conditions, although many such measurements may be made within the clinical area. Frequently the researcher will be taking samples of body fluids such as blood or urine; therefore, all necessary precautions should be taken to reduce the risk of



infection and cross-infection to both the researcher and the patient, and possible contamination of the sample by the researcher.

The integrity of the sample must also be safeguarded. Samples should be taken according to a standardized protocol, correctly labelled and stored, properly transferred and correctly tested (see Ware *et al.*, 1993, for an example of such a procedure). Each step of the journey from patient to laboratory has the potential to render the sample useless for research, due to either deterioration or contamination.

Once the sample has arrived at the laboratory the researcher must frequently place trust in the laboratory technicians who handle and test the sample. This trust may also have to be extended to the reliability of the laboratory equipment since researchers may be denied access to the laboratory. To overcome potential problems in the laboratory it is advisable to seek advice and support from the laboratory manager who can ensure that samples are carefully managed and that measuring instruments are accurate and properly calibrated. He should also be able to provide information regarding the specifications, reliability and validity of the measuring instruments, which should be quoted in the research write-up.

Many potential problems can be avoided by maintaining control of samples taken for *in vitro* measurement. As soon as the sample passes from the researcher's hand it is out of her control and the potential for error becomes greater. To ensure the integrity of the sample the researcher should take responsibility for as much of the process as possible. This should include transporting samples to the laboratory and, where possible, testing them herself.

It should not always be assumed that laboratory equipment is the most accurate and it is well worth the researcher investigating alternative measuring instruments which can be used at the bedside. For example, there are many *dipstick* products that could be used as an alternative to sending samples to the laboratory. Many bedside instruments have been researched and validated and a frequent bonus, such as that found by Newman (1988) researching blood sugar levels, is that such instruments are more cost-effective than laboratory services.

The basic steps of making physiological measurements are summarized in Fig. 28.2.

## Variables

When considering the design of a research project it is vital for the researcher to consider all the variables that might affect the physiological parameter being measured. This is particularly difficult when conducting research within the clinical setting of nursing practice because there are so many factors (extraneous and subject variables) which have the potential to influence the dependent variable. Examples of subject variables frequently recorded by researchers are age and gender. These are attributes of the research subjects that cannot be changed.



IDENTIFY:	Variables <ul style="list-style-type: none"> <li>• dependent</li> <li>• independent</li> </ul>
DESCRIBE:	Operational definition <ul style="list-style-type: none"> <li>• measurement procedure</li> <li>• protocol to be followed</li> </ul>
DETERMINE:	Timing of measurements Frequency of measurements
CONTROL:	Controlling the environment <ul style="list-style-type: none"> <li>• <i>can the environment be controlled?</i></li> <li>• <i>have extraneous factors been considered?</i></li> <li>• <i>have subject factors been considered?</i></li> </ul>

Fig. 28.2 Making physiological measurements.

However, when a researcher introduces an independent variable (such as the information booklet in the hypothetical cardiac rehabilitation study), its content or the frequency of its use might be varied.

A good research example that illustrates the value of recording multiple variables is given by Ware *et al.* (1993) in their study of illicit drug-taking mothers. In their study drug-taking was assessed by measuring drug levels in the urine of neonates. Age, race, residential area, type of delivery, previous number of pregnancies, gestational age of the neonate and several other factors were also recorded. Analysis of the data enabled the researchers to develop a profile of drug-taking mothers that subsequently helped to identify at-risk neonates.

### Operational definition

When the researcher has decided which physiological measurements to record, the next stage is to give each one an operational definition. An *operational* definition is one that, for the purpose of the research study, describes what is meant by the variable term and how it is to be measured. An example of an operational definition is (Fulbrook, 1997):

‘Axillary temperature: temperature is obtained from the sensor matrix of a single-use, disposable clinical thermometer placed high in the axilla against the torso and parallel to the patient’s body for a period of 3 minutes with the arm firmly positioned to the side.’

Operational definitions are then used as a framework to guide the research process and to ensure a standardized approach. As such they are also very important for subsequent researchers wishing to replicate the study, and to enable readers of the research to apply the findings to their nursing practice. If, for example, the duration of thermometer placement had been excluded from the above operational definition, neither would be possible.



## Timing and frequency of measurement

When taking both *in vitro* and *in vivo* physiological measurements it is vital to ensure that they are taken at the appropriate time and frequency.

### *Timing of measurement*

It is particularly important to consider the measurement of the dependent variable in relation to the independent variable. For example, in the hypothetical study above which measured physiological parameters following a period of rest, there may well be an effect measurable in the cardiac response, but the duration of the effect is unknown. It might be that following a one-hour period of rest, heart rate and blood pressure do indeed fall. However, the duration of this effect might only be 20 minutes, after which the heart returns to its pre-intervention status. All measurements recorded after this time will therefore show no change. A faulty research design that specifies physiological measurements 30 minutes following the rest period will fail to identify any effect. In this respect the importance of a pilot study cannot be over-emphasized. A pilot study can save time and energy by helping to identify the appropriate timing of measurements.

A whole range of factors could affect the validity of physiological measurements if inadequate consideration is given to the timing of their recording. Additionally it may also be necessary to take repeated measurements over a period of time in order to demonstrate consistency of findings.

### *Frequency of measurement*

The frequency with which physiological measurements are taken may itself affect the range of responses obtained, particularly if the research subject finds the measurement stressful. The recording of blood pressure is a familiar example, since blood pressure might be temporarily elevated during a stressful event. Gruber's (1974) study is a similar example. Because there was a documented potential for parasympathetic slowing of heart rate in response to rectal thermometer insertion, she undertook a study of rectal temperature measurement. Contrary to expectations she found, in fact, that her subjects' heart rates tended to increase, probably in response to the embarrassment and anxiety caused by the procedure rather than the procedure itself.

Frequency of physiological measurements should also be planned so that they do not coincide with other events which could affect them. It would be unwise to measure respiratory rate, peak flow and tidal volume on an emphysemic patient only five minutes after he has walked back from the bathroom, unless the walk back from the bathroom was the independent variable under investigation.

Sometimes physiological measurements are taken to compare the accuracy of a variety of measuring instruments, or possibly to compare a physiological par-



ameter measured at different sites. The researcher, for example, might wish to compare the accuracy of blood pressure measurements using a conventional sphygmomanometer with an indwelling arterial line and a non-invasive automated instrument (see Norman *et al.*, 1991, for a comparable example). Another example is that of Fehring & Schlaff (1998), who compared three different *methods of predicting/detecting ovulation: assessment of cervico-vaginal mucus* (colour, stretch and consistency); detection of luteinizing hormone (using a self-test urine dipstick); and vaginal electrochemical assessment (using an electrical monitor). Following their research they were able to state that the electrical monitor (which they were seeking to validate) was as clinically reliable as other more traditional/conventional methods.

Ideally such measurements should be performed simultaneously to ensure that the conditions under which all measurements are taken are identical. It is also ideal to repeat measurements over a period of time, which enables the researcher to demonstrate reliability of findings and adds to the validity of the research.

Another reason to take repeated measurements is to demonstrate that the findings are consistent under a variety of conditions such as sleep and wake or day and night patterns. In particular, several physiological parameters are known to be affected by circadian variations (Clancy & McVicar, 1994). A single cluster of measurements taken in isolation has little validity compared to repeated measurements taken over a period of time.

### **Controlling the environment**

As described in the introduction, it is very difficult to control the environment when research is carried out within a non-laboratory setting, such as a clinical ward area. The scientific approach is to reduce the potential for unpredictable factors that may affect the research findings; therefore, the easily controlled environment of the laboratory is deemed the most suitable. However, within the clinical setting it is often more appropriate to try to consider all the factors which *may impinge on the phenomenon being investigated*. When designing a research study the researcher must therefore make a decision in this regard, and the number of variables that require measurement or recording should be determined in advance.

Since *nursing, midwifery and health visiting are professions which concern themselves with caring for patients* it is very difficult to remove patients from the health care setting and study them in isolation. Most clinical research will probably (and desirably) be carried out in the context of the situation in which it is likely to occur. As such, rather than attempt to control the environment, the researcher should attempt to take into account the environmental factors that might affect the measurement of physiological parameters.

There are many environmental factors that could affect the physiological variable being measured. For example, ambient temperature will affect skin



temperature, as might recent exertion. Also, intrinsic psychological stressors such as anxiety or extrinsic psychological stressors such as those produced by excessive noise and other noxious stimuli, such as strong smells, might induce a degree of stress that affects the cardiac parameter being measured. Simple investigations such as pupil diameter may vary in response to changes in light intensity. Thus it is important for the researcher, who is most likely to be found investigating phenomena within the health care setting, to consider environmental influences on the variable being measured. Because it is rarely possible to standardize the environment of nursing practice, variations in environmental factors should be noted at the time and subsequently taken into account.

The potential for environmental influence on a dependent variable is given in the following hypothetical example. An early study of cardiac output in shocked patients suggested that it correlates with great toe temperature (Joly & Weil, 1969). More recently a small study has challenged this, stating that it is irrational to base therapy on this measurement (Woods *et al.*, 1987). An intensive care nurse decides to do a more up-to-date study and records the great toe temperature of a series of clinically shocked patients. She is careful to ensure that her research design is sound and does in fact make very accurate recordings of both cardiac output and great toe temperature. Subsequent statistical analysis indicates a relationship between the two variables whereby great toe temperature falls when cardiac output falls. The nurse is quite pleased with her findings and is considering trying to get her research published. A colleague asks whether she recorded room temperature and also points out that some patients' feet were covered by blankets whereas others were not. The nurse is suddenly aware that there were other factors that might have influenced great toe temperature. Unfortunately she omitted to record them and realizes that, because she cannot categorically state that the temperature changes were solely as a result of cardiac output changes, the validity of her findings is severely limited.

There is clearly a potential for environmental factors to influence both the accuracy and the meaning of physiological measurements. The nurse researcher should attempt either to negate their influence or to ensure that their presence is recorded and considered with respect to the data analysis. Often there may be factors which, on their own, have no measurable effect on the dependent variable, but when they occur in combination with two or more other factors do exert an effect. ▽

### Measuring Instruments

This section describes issues related to the use of measuring instruments, and is summarized in Fig. 28.3. The strength of measuring instruments lies in their accuracy and objectivity; that is, their ability to quantify a phenomenon. Arguably machines reduce the potential for human error. Therefore, when two or



CHOOSE:	Measuring instrument(s)
EVALUATE:	Reliability <ul style="list-style-type: none"> <li>• does the instrument consistently give true readings?</li> <li>• are the units of measurement sensitive enough?</li> <li>• do the readings remain consistent over time and under different conditions?</li> </ul>
EVALUATE:	Validity <ul style="list-style-type: none"> <li>• does the instrument measure what it is supposed to measure?</li> <li>• does the instrument measure what you want it to measure?</li> </ul>
CHECK:	Previous researchers' use of the instrument Manufacturer's specifications
TEST:	Standardize Calibrate
COST:	Cost <ul style="list-style-type: none"> <li>• equipment hire/purchase</li> <li>• laboratory time</li> </ul>

Fig. 28.3 Measuring instruments.

more researchers use the same instrument of measurement, they are likely to obtain *highly similar results*.

### Reliability and validity

There are two main issues to consider with regard to the use of instruments for the measurement of physiological parameters: reliability and validity. Reliability is concerned with the instrument's accuracy of measurement, whereas validity is concerned with its ability to measure what it is supposed to measure.

#### Reliability in physiological measurement

Reliability is a measure of the instrument's sensitivity – in other words, its precision of measurement. Precision is important in terms of the accuracy and consistency of measurement. A measuring instrument must be sensitive enough to measure a physiological parameter in question to a satisfactory degree of precision. If, for example, babies' weight gains in response to either breast- or bottle-feeding were to be measured with a set of scales whose smallest increment of measurement was a kilogram, they would quite clearly be of no use to the researcher. Similarly, if a set of scales were used for the same study, but were found to have a variance of plus or minus 5% when a standard weight is placed on them, then they too are *unreliable* and of little use.

The reliability of an instrument is determined by many factors and the researcher would be unwise to accept a manufacturer's specification regarding the accuracy of an instrument, since specifications are usually quoted on the basis



of standardized laboratory conditions. Some instruments become inaccurate with prolonged use or wear and tear, whereas others may be more prone to errors caused by the local environment. Electronic instruments in particular are prone to errors caused by electrical interference.

Prior to commencing a research study it is advisable to test the measuring instrument to ensure that it is accurate when in use. A pilot study will usually highlight any errors or inconsistencies. Some instruments are supplied with their own testing instruments and, whenever possible, these should be used. Occasionally it is not possible to test some equipment before use, for example sterile equipment. In such circumstances the reliability must be accepted from the manufacturer's specifications.

### *Validity in physiological measurement*

Just because an instrument is reliable does not mean that it is valid. A researcher might obtain a highly accurate measure of body length using a tape measure but it would not be *valid* if the researcher wishes to know the weight of the person.

The researcher needs to address the issue of how appropriate the measuring instrument is for measuring the physiological parameter in question. Some instruments do not actually measure the parameter for which they give a value. For example, tympanic thermometers *predict* core body temperature on the basis of infrared light emitted from the tympanic membrane. It may not therefore be as reliable in measuring as an electronic temperature sensor placed in the pulmonary artery measuring *actual* core body temperature.

It is frequently helpful to refer to previous research studies that have either used the same instrument or evaluated its reliability and validity. A lot of time and energy can be wasted trying to test instruments which have already been scrutinized by previous researchers.

### **Cost**

Another issue to consider with respect to measuring instruments is that of cost. Electronic machines in particular are very expensive, both to purchase and maintain. It is always worth trying to enlist the instrument manufacturer's support for the research study. Because it is in their interests to promote their products they are frequently amenable to lending or even donating equipment for research purposes.

In summary, the nurse researcher must carefully consider the appropriateness of any instrument used to measure physiological parameters for a research study. While the issue of cost must be considered, it should not be at the expense of instrument reliability and validity. Finally, it should not be assumed that a machine is any more capable than a human of measuring a physiological par-



ameter. The more complicated a measuring instrument, the more potential there is for both researcher handling error and internal malfunction.

For an overview on reliability and validity of measuring instruments see Giuffre (1995a, 1995b).

## Data collection

### Sampling

Sampling procedures are described in Chapter 22. The important factor regarding a sample is that it should be representative of the population being studied. In the context of physiological measurements, sampling merits some consideration.

### Data collectors

If, for example, the nurse researcher wishes to know the mean weight and blood pressure of patients admitted to a medical ward, she has a choice: she can measure the above parameters of *all* the patients admitted over a certain period of time, or she can *select a sample*. What decision she comes to in this regard may depend on what is most convenient for her to do, since time is often a major factor. Should she decide to take measurements from all patients, then her presence, or that of other data collectors, is required throughout the 24-hour period for the duration of the study, which is not usually a practical option. While ensuring that all patients are included, this also introduces the potential for variation in the measurements recorded due to slightly different techniques. The advantage of the nurse researcher taking all the measurements herself is that she is sure, and can therefore state, that a uniform technique was used on every occasion.

#### *Standard technique*

If colleagues are enlisted to gather data it is vital to ensure that they are all briefed in the measurement technique required and are fully conversant with the operation of instruments used to obtain measurements. Chan (1993), who compared ultrasound estimation of bladder urine volume with its actual measurement following catheterization, described such a procedure. In order to ensure that the method was correct, nurses had first to be trained in the use of ultrasound techniques.

#### *Pilot study*

A pilot study is necessary prior to commencing the main study to test the ability of the research assistants to obtain accurate data.



It is all too easy to assume that nurses, by virtue of their everyday role, are more than capable of taking physiological measurements. Even a simple procedure like taking a patient's blood pressure is fraught with potential problems, which may lead to inaccuracies and inconsistent techniques between data collectors. For example: Was the patient sitting up or lying down? How long had he been in this position? Where was the sphygmomanometer placed in relation to the patient? Where was the cuff placed on the upper arm? Was the cuff the correct size? Was the cuff correctly applied? How was the degree of cuff inflation determined? Was the rubber tubing in good condition? Was the fourth or the fifth Korotkov sound used to determine diastolic pressure? Was the patient relaxed? The list may be very long, but each step of the procedure should be considered to ensure standardization.

### Ethical issues

In any research study there are many ethical issues which require consideration. These are addressed in detail elsewhere in this book, but there are some specific ethical issues which should be considered in relation to the measurement of physiological variables.

#### **Foreseeable harm**

No foreseeable harm should come to the subject as a result of physiological measurement. The researcher must therefore make a judgement in this respect. Virtually every procedure imaginable carries with it a degree of risk, however small. This degree of risk must be balanced with the need to carry out the research, but always with the balance tilted in favour of the research subject. It should also be remembered that it is not just physical harm that may be caused; there may also be a psychological effect, which might be as simple as embarrassment or loss of dignity.

#### **Abnormal findings**

The researcher must also consider in advance what she will do if her findings are such that there is a threat to the patient's health. For example, what course of action should she take if she finds that one of her subjects has an abnormally elevated blood pressure? Again, the principle is that the patient should not come to any harm as a result of the research study. Quite clearly, in such instances, the researcher's priorities must be with the research subjects. All decisions must be made in their best interests, even if this means modifying or abandoning the research study.



## Conclusions

Physiological measurements may be taken by researchers for a variety of research purposes, and provided that several basic rules are followed, highly reliable and valid data will be obtained for analysis.

In the first instance the researcher should determine what measurements are necessary for the study. This should be considered from the point of view of both independent and dependent variables and in the light of the potential for *environmental factors to affect their reliability and validity*. The measurement technique should be carefully thought through and standardized. This is particularly important if more than one researcher is collecting data. Any instruments used to measure physiological parameters should be carefully considered in terms of reliability and validity and ideally should be tested for accuracy prior to commencement of the main study. As with all research, ethical issues must be carefully thought through in advance and permission obtained as appropriate.

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# Fit for practice: Project 2000 student nurses' views on how well the curriculum prepares them for clinical practice

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This paper presents the findings from a small study, which compared student nurses' views on how well they felt the Project 2000 curriculum had prepared them for their first clinical placements. The views of two student nurse cohorts were obtained using a questionnaire developed for the purpose. The curriculum for the 'old' cohort allowed very little clinical time during the first 18 months and focused on academic classroom-based learning. The curriculum was subsequently restructured so that students on the 'new' curriculum experienced greater emphasis on practice and theory to practice links, and undertook their first clinical placement much earlier on in their course. Although statistical analysis of difference between the two cohorts suggests that students from the 'new' cohort felt they were better prepared, the actual differences in scores was small. The findings of this study provide only modest evidence of improvement in 'new' student nurses' views of how well they felt they had been prepared for their first placement. © 2000 Harcourt Publishers Ltd

## Introduction

### Project 2000

The introduction of Project 2000 radically transformed the way student nurses were prepared and educated. Its aim was to provide a workforce of autonomous 'knowledgeable doers' who could effectively respond to the complex demands of a changing health system, whether in hospital or community care settings (UKCC 1986). More than a decade later, the conclusions drawn by the United Kingdom Central Council's (UKCC) Commission on Nurse and Midwifery Education (UKCC 1999) suggest that the decisions taken to implement Project 2000 reforms were the right solution (Peach 1999, cited in Walters 1999). It is argued that at present newly registered nurses and midwives possess a number of desirable qualities including communication skills and research awareness and 'are better able to adapt to change and

implement evidence-based practice than those trained under the apprenticeship-style model' (UKCC 1999, p. 4). The report also noted that there are problem areas that impact upon fitness for practice at the point of registration. Thus the commission has made a number of key recommendations that involve structural changes to existing pre-registration curricula, lengthier clinical placements with appropriate supervision and improvements in the relationships between the higher education sector and the health service.

### Historical context

During the mid-Eighties, the need for a policy review and nurse education reform resulted from a number of factors. Educationally, it was acknowledged that existing curricula content and clinical experiences were failing to meet learners' needs (Nolan 1993). For example, it was common



practice for students to be used as an extra pair of hands. Thus their clinical development became secondary to the priorities of the service. Not surprisingly, many newly registered nurses felt ill equipped to cope with the demands of an evolving health care system. In reaction to this, high levels of stress and low morale experienced while on placements, a large number of students failed to complete their courses or left the profession upon qualification (Lindop 1989, Kendrick & Simpson 1992). Evidence of attrition rates since the introduction of Project 2000 is currently unavailable to make a detailed and comparable assessment between pre- and post-reform periods, however recommendations have been made to monitor future trends (UKCC 1999).

From a demographic viewpoint, it was speculated that the proportion of 18-year-old female recruits available to enter nursing would fall by the mid-Nineties, and that the shortfall would be insufficient to sustain staffing levels (Kendrick & Simpson 1992, Nolan 1993). Potential entrants would require an attractive package of educational experiences, which would reverse the rates of attrition and resolve the nurse shortage predictions. It was also anticipated that the number of elderly people in the population would rise which, in turn, would have an impact on the organization and provision of health care (Macleod-Clark et al. 1996). Finally, the reforms were also influenced by a realization that the delivery of nurse education should be cost-effective and value for money (Nolan 1993); thus the need for retaining student nurses to graduation and beyond was in part driven by financial imperatives.

Much of the movement towards reforming the pre-registration courses was prompted by the Royal College of Nursing (RCN), which had been critical about the standards of education and practice, and through its *Commission on Nurse Education* document (RCN 1985) offered detailed proposals for the training of nurses. The following year, the UKCC published *Project 2000 – A new preparation for practice* (UKCC 1986), which endorsed many of the RCN's (1985) suggestions. Following extensive consultation, the Council's recommendations received government approval and were announced in 1988 (Nolan 1993).

One of the central changes behind Project 2000 was that students should have supernumerary

status and would be under educational control (UKCC 1986). The drive for this was to ensure that future student nurses would not be viewed as apprentices but supported by appropriate clinical supervision, which was to coincide with classroom-based learning. Their introduction to the practice areas would also be staggered and placements would be shorter. According to the RCN (1985) nurse recruits needed protecting early on from aspects 'such as pain, fear, anguish emotional trauma and death ... which can result in a harrowing experience for the student' (Kendrick & Simpson 1992, p. 94). The recommendations also stipulated that traditional educational programmes should be converted from certificate level to diploma standard and incorporate a Common Foundation Programme (CFP), with progression after 18 months to one of four branch programmes. The content of the syllabus should also shift away from a cure-orientated model towards an emphasis on health education and preventative care, delivered in higher education institutions (UKCC 1986).

### Implementation issues

Despite the changes, analysis from various Project 2000 demonstration sites revealed some problems. For instance, during CFP the time spent on theoretical studies increased, was notably disproportionate to the amount devoted to skill acquisition and was regarded as less important (Goad 1992, Elkan & Robinson 1993, Macleod-Clark et al. 1996). As a result of a prolonged period of academic learning without direct patient contact, students became frustrated and disappointed about their preparation during CFP, whereas ward staff interpreted the delay into the clinical environment as evidence of reinforcing the theory-practice gap (Allen 1990, Blackburn 1992, Elkan & Robinson 1993).

A number of Project 2000 reports went on to suggest that, as a result of poor acquisition of practical skills, students felt unconfident and incompetent in their CFP placements when compared to pre-Project 2000 cohorts (Elkan et al. 1993, Macleod-Clark 1996, White 1996). Moreover, the demands generated by the educational reforms meant that nurse teachers were neither able to supervise the students whilst on the wards (Elkan & Robinson 1995) nor to familiarize practitioners with educational



changes (Twinn & Davies 1996). This led to confusion over a range of issues, including placement outcomes, assessment documentation and in particular, whether the students were 'safe' to perform patient care without direct observation (Elkan et al. 1993, Macleod-Clark et al. 1996). Many of the above themes were endorsed by the Education Commission's findings, whose survey gathered evidence from 84,000 registered nurses and final year students, and from 450 organizations (UKCC 1999).

Criticisms about short placements also emerged. These centred on the lack of opportunity that students now had for refining their hands-on skills and achieving other clinical learning outcomes, particularly in the absence of their mentor, who may have been rostered on night duty or inaccessible because of ward pressures (White 1996, Willis 1996). As a result, Project 2000 students experienced stress either due to a fear of failure or of making mistakes as well as due to the negative attitudes of staff (Cuthbertson 1996, Power 1996). This included being regarded as 'burdensome' or a hindrance, as it was perceived that Project 2000 students could not be relied on to perform unsupervised when staffing levels were low nor to assume responsibility for practical aspects of care (Macleod-Clark et al. 1996, White 1996).

It seems that intentions set out in Project 2000 of developing confident, critical thinking and autonomous knowledgeable doers have materialised although some issues remain unresolved. It may be suggested that this can be partly attributed to the rapid planning, designing, internal validation and implementation of Project 2000 curricula at a time when health service reforms were also being introduced (Elkan & Robinson 1995, Jowett et al. 1994).

## Background

The School of Health Studies, Portsmouth, was one of the first nursing schools to deliver the Project 2000 curriculum. The first cohort began their programme in September 1989, which led to the award of Diploma in Higher Education in Nursing Studies with Nurse Registration.

Although the UKCC had set out the framework and guidelines, specific curricular details were devised by nurse teachers. The interpretation of Project 2000 programmes, particularly in relation

to practice, has differed from college to college (White 1996, Willis 1996). As a pilot centre for Project 2000, the school was monitored by Kings Fund researchers. Their findings following feedback from teachers, students and service staff were similar to those of other centres, chiefly related to skills acquisition and a disquiet among service providers that students were inadequately prepared to undertake autonomous practice on completion of the course. It was sensed that nursing practice was failing to tie in with class content and was also assuming a secondary role to academia, thus widening the 'theory-practice gap'. These views were reinforced by other students' experiences (Elkan & Robinson 1995, Twinn & Davies 1996).

The Portsmouth course was revalidated in 1994, following a restructuring of the curriculum to meet University policies related to semesterisation and unitisation, and to overcome the problems of skills acquisition. The new curriculum saw some radical changes in course delivery and structure with a clearer emphasis on meeting practice at an early stage in the programme, plus detailed practice competencies that must be met in order to ensure adequate skills preparation.

In the light of the very distinct differences between the 1989 and 1994 curricula, it was felt to be worthwhile to test the assumption that the students would be better prepared for practice under the revised programme. This research involves students who followed the original 1989 training programme and those who followed the 1994 programme.

## Methods

### Purpose of the study

The purpose of this study was to examine the perceived effectiveness, from the student nurses' point of view, of two different Project 2000 curricula in preparing them for their first clinical placement.

### Hypothesis

The null hypothesis that was tested was that there would be no significant difference in student nurses' views on how well they were prepared for their first clinical placement.



## Subjects

The subjects were all student nurses drawn from a convenience sample in their final year of training. Two Project 2000 cohorts were selected: the last cohort of the 'old' curriculum and the first cohort of the 'new' curriculum (described above). These students were chosen because it was felt that having commenced training within six months of each other any differences between the two groups would most likely be attributable to the curriculum changes.

## Procedure

In the first instance open-ended questionnaires were distributed to a random sample of student nurses from each cohort. Five questions were posed (Fig. 1). Following content analysis of these questions, five themes emerged: preparation for clinical practice; expectations of clinical practice; application of theory to clinical practice; acquisition of practical nursing skills; and feeling like a nurse.

Using issues raised by students under the five themes and following peer review with the research team, a 25-statement questionnaire was devised, comprising five statements under each of the themes.\* Students were asked to indicate their strength of agreement with the statements using a four point rating scale: *very; quite; not very; not at all*. These points were subsequently converted into numerical data for statistical analysis, whereby a score of 4 indicated strong agreement with a positively worded statement. An additional set of five questions were devised asking students to summarize their agreement/disagreement (yes/no) in relation to each of the five themes (Fig. 2).

## Statistical analysis

Initially, the five questions relating to each theme were collapsed into single variables and mean scores were calculated. These new variables were examined for kurtosis and skewness to determine normal distribution. Since the raw data were of an ordinal level and the above variables were

\* A copy of the questionnaire may be obtained from the authors on request.

found to be abnormally distributed, non-parametric statistical tests were used to analyse differences between the two cohorts of student nurses. The Mann-Whitney U test was used to analyze differences between the five themes, and the chi-square test was used to analyse differences between the summary questions (Fig. 2). Because  $2 \times 2$  tables may overestimate chi-square values, Yates Correction for Continuity was employed (Bryman & Cramer 1999). Since the findings were unlikely to be of clinical significance and differences between the two cohorts could go in either direction, the two-tailed significance level was set at  $p < 0.05$ . Data were analysed by computer using the Statistical Package for Social Scientists (SPSS).

## Results

### Subjects

Ninety-four students completed the questionnaires: 55 from the 'old' cohort; 39 from the 'new'. Not all questionnaires were fully completed.

### Theme 1: Preparation for clinical practice

The mean score for all subjects was 2.33 ( $n = 92$ )

- What were the main POSITIVE aspects of your first clinical placement?
- What were the main NEGATIVE aspects of your first clinical placement?
- What factors helped you prepare for your first clinical placement?
- What factors hindered the success/failure of your first clinical placement?
- How could your preparations for your first clinical placement have been improved?

Fig. 1 Open-ended questions.

- Were you adequately prepared for your first clinical placement?
- Were your expectations of your first clinical placement met?
- Were you able to apply theory learnt in school to clinical practice?
- Did you have adequate practical skills to cope with your first clinical placement?
- Did you feel like a 'nurse'?

Fig. 2 Summary questions.



indicating an overall positive response. The mean score for the 'old' cohort was 2.22 (SD 0.53; n = 54) with a higher mean score of 2.48 (SD 0.55; n = 38) for the 'new' cohort. The difference between these two scores was significant ( $p < 0.05$ ;  $U = 750$ ).

Comparing the data from the summary question: 78% (n = 43) of the 'old' cohort felt they were not adequately prepared for clinical practice whereas 50% (n = 19) of the 'new' cohort felt they were. These differences were significant ( $p < 0.01$ ;  $\chi^2 = 6.81$ ;  $df = 1$ ; n = 93).

### Theme 2: Expectations of clinical practice

The mean score for all subjects was 2.51 (n = 93) indicating an overall positive response. The mean score for the 'old' cohort was 2.39 (SD 0.40; n = 55) with a higher mean score of 2.70 (SD 0.44; n = 38) for the 'new' cohort. The difference between these two scores was significant ( $p < 0.001$ ;  $U = 628$ ).

Comparing the data from the summary question: 69% (n = 38) of the 'old' cohort felt their expectations of clinical practice were met compared to 84% of the 'new' cohort (n = 32). Although this represents an important finding it was not statistically significant.

### Theme 3: Application of theory to practice

The mean score for all subjects was 2.74 (n = 91) indicating an overall positive response. The mean score for the 'old' cohort was 2.75 (SD 0.45; n = 53) with a slightly lower mean score of 2.71 (SD 0.50; n = 38) for the 'new' cohort. The difference between these two scores was not statistically significant.

Comparing the data from the summary question: 65% (n = 35) of the 'old' cohort felt they were able to relate theory to clinical practice whereas 72% of the 'new' cohort (n = 26) felt they were. These differences were not statistically significant.

It is noted that although the 'old' cohort scored slightly higher on their opinion of their ability to relate theory to practice, a greater percentage of the 'new' cohort stated positively that they were able to relate theory to practice.

### Theme 4: Acquisition of practical nursing skills

The mean score for all subjects was 2.82 (n = 91) indicating an overall positive response. The mean

score for the 'old' cohort was 2.70 (SD 0.35; n = 54) and 2.98 (SD 0.49; n = 37) for the 'new' cohort. The difference between these two scores was significant ( $p < 0.001$ ;  $U = 564.5$ ).

Comparing the data from the summary question: 55% (n = 30) of the 'old' cohort felt they had inadequate practical skills in preparation for clinical practice whereas 61% (n = 22) of the 'new' cohort felt they did have adequate practical skills. Although this difference is educationally and clinically significant it was not found to have statistical significance.

### Theme 5: Feeling like a nurse

The mean score for all subjects was 2.68 (n = 94) indicating an overall positive response. The mean score for the 'old' cohort was 2.59 (SD 0.48; n = 55) and 2.81 (SD 0.58; n = 39) for the 'new' cohort. The difference between these two scores was significant ( $p < 0.05$ ;  $U = 761$ ).

Comparing the data from the summary question: 69% (n = 38) of the 'old' cohort stated that they did not 'feel like a nurse' on their first clinical placement whereas 54% (n = 20) of the 'new' cohort stated that they did. These differences were significant ( $p < 0.05$ ;  $\chi^2 = 4.01$ ;  $df = 1$ ; n = 92).

## Discussion

In order to make sense of the findings it is important to consider first the limitations of the questionnaire design. Although most of the differences between the groups were found to be statistically significant, the actual numerical differences between the 'new' and 'old' groups were fairly small. The mean scores for all five themes fell within 0.48 of the mid-point of 2.5 on the Likert-type scale (that is, between 2.22 and 2.98), indicating that the mean scores for both groups for all five themes lay somewhere between the *not very* and the *quite* levels of agreement. The greatest standard deviation for any of the themes was 0.58, suggesting that the scores were tightly grouped around the mid-point of the scale. Arguably this can be seen as a function of the design of the Likert-type scale, which permits a choice of two levels of agreement only, either for or against the statement. Furthermore, the four-point rating scale of *very*; *quite*; *not very*; *not at all* is itself ambiguous, since *not very*, the weakest form of disagreement, is



arguably the opposite of *very*, the strongest form of agreement, while the opposite of *not at all* should perhaps be *completely*. This, of course, leads to debate about where the true mid-point of the scale actually lies, and in particular, whether it is mid-way between the *very* and *not very* ratings (i.e., a score of 3, which equates to a rating of *quite*), or whether it is the numerical mean of 2.5, which is mid-way between *quite* and *not very*. While this might lead to some confusion over the absolute interpretations of the scores (whether, for example, a mean score of 2.75 represents an overall positive or a negative attitude), comparisons between the groups are still possible.

Theme 1 attempted to measure the degree to which the students felt prepared for their first clinical placements, with the finding that the 'new' cohort felt significantly more prepared than the old. However, the mean scores for both groups fell below the mid-point(s) of the scale, suggesting that the improvement, whilst statistically significant, still left a great deal of work to be done. Furthermore, only half of the 'new' group felt that they were adequately prepared, and it is questionable whether this degree of preparedness was yet back to the pre-Project 2000 level reported by Elkan et al. (1993), Macleod-Clark (1996) and White (1996).

This finding is consistent with the conclusion drawn by the UKCC Education Commission (UKCC 1999). The commission found 'disturbing anecdotal and empirical evidence indicating that newly-qualified nurses and midwives have a need for constant support and may lack practical skills literacy' (p. 34). It would appear that this lack of preparedness for practice is evident from the very first placement. It is unclear why the curricular reforms did not have the desired effect, but some clues are present in the findings of the other four themes.

The second theme explored the students' attitudes towards their expectations of their first placement, and found the mean for the 'new' group to be significantly higher than that for the 'old' group, with 84% of the 'new' group indicating that their expectations had been met. Although the difference between the groups was significant, a comparison is difficult, since the radical changes to the curriculum might well have led to different expectations from students. It is possible, then, that the difference between the two groups reflects a lowering of expectations

about being competent to deal with the clinical demands of the first placement rather than an actual improvement in preparation for the placement. In other words, it is not fully apparent whether the 'new' cohort was performing better, or merely expecting less. This uncertainty is highlighted by comparing the figure of 50% of the new cohort who felt prepared for their first placement, with the figure of 84% who felt that their expectations had been met. Clearly, the expectations of some of the students did not include being prepared for their placement.

The third theme highlighted the most worrying aspect of the findings, where the 'new' group felt less (although not significantly less) able to apply theory learnt in school to clinical practice. Bearing in mind that one of the implicit aims of Project 2000 was to increase the research awareness of nurses so that they might be more willing and able to apply research-based theory to practice (Chapman 1991), this would appear to be one area where it has, perhaps, failed to deliver. This difficulty was highlighted soon after the introduction of Project 2000, and one of the concerns with the original syllabus was that students felt that practice was taking a secondary role to theory (Elkan & Robinson 1995 Twinn & Davies 1996). It is perhaps worrying that, ten years on from the first Project 2000 course, the problem has yet to be resolved, at least in this particular school. Perhaps reassuringly, this finding was to some extent contradicted by the result of the summary question from this theme, where 72% of the 'new' cohort felt able to relate theory to practice, compared with only 65% of the 'old' cohort. Such contradictions are, however, to be expected, particularly in first year students, given the complexity of the issue (Rafferty et al. 1996) and the multifactoral nature of the theory-practice gap (Hunt 1981).

The fourth theme is linked to the previous one, and relates to the acquisition of practical nursing skills. Clearly, the ability to relate theory to practice is of little benefit if students do not possess the requisite practical skills, and the findings from this theme are a little more reassuring, suggesting that the 'new' cohort felt significantly more confident about their practical skills than the 'old' cohort. The mean score of 2.98 for the 'new' cohort was the highest score of any of the themes, and almost reached the *quite* level of agreement. The summary question indicated that 61% of the 'new' cohort felt that they had



adequate practical skills for their first placement, but of course this still leaves well over one third of students feeling inadequately prepared in terms of practical skills. This issue of the acquisition of practical skills has now been recognized by the UKCC, which has recommended the introduction of practice skills and clinical placements earlier in the CFP (UKCC 1999, Recommendation 5).

The final theme brought together elements from all of the others, and was concerned with the issue of feeling part of the professional culture of the ward. This has often been associated with the supernumerary status of Project 2000 students and their absence from the clinical area at key times of the day. Once again, the UKCC Commission has attempted to address this problem by recommending longer placements, which give experience of the 24 hours per day, seven days per week nature of nursing.

Reassuringly, it was found that the 'new' cohort felt significantly more part of that culture than the 'old' cohort did, possibly due to feeling more prepared in terms of their practical skills. What is less clear, however, is the role within the team which the students felt that they were (or should be) playing, since the questions which made up this theme interspersed issues of feeling like a professional, being a student, and the potential conflict between them. It is not clear from the findings, then, whether students thought that they ought to feel like professionals, or even whether they felt positive about their perceived professional status, especially this early in their training and particularly in light of their supernumerary role. It could be argued that 'feeling like a professional', which was scored positively in this study, is dangerously premature and could lead either to stress or to complacency in students on their first placement. Indeed, in the light of the RCN (1985) recommendations that students needed protection early in their training from aspects 'such as pain, fear, anguish, emotional trauma and death' (Kendrick & Simpson 1992), it is of some concern that, as early as their first clinical placement, 54% of the 'new' cohort of students 'feel like a nurse'.

## Conclusions

The aim of this small-scale study was to provide some local and specific information about the

effects of changes to a particular course. The findings provided some evidence for a modest improvement in the students' attitudes towards their first clinical placement, although there is still clearly room for improvement.

However, the findings also raise some more general issues about the Project 2000 curriculum and the difficulties of providing an increasingly academic education for what is first and foremost a practice-based discipline, particularly on the issue of the application of theoretical knowledge to practice. These issues are finally being addressed by the UKCC (1999), but ironically, whilst many colleges throughout the country are attempting to make the Project 2000 curriculum more practice-based, there is a growing condemnation in the popular press of what is seen as a move away from the education of nurses for their work at 'bedpan' level (Sewell 1999), with Project 2000 recently being described as a ludicrous proposition (Lawson 1999, cited in Payne 1999).

Some of the uncertainty expressed by the students in this study about whether or not they were prepared for practice is possibly due to the continuing confusion about theory and practice which pervades not only the popular press, but also the profession itself. Many academic writers lay the cause of the theory-practice gap firmly at the feet of practitioners and their unwillingness or inability to put research findings into practice. Chapman (1991), for example, bemoaned the fact that most nurses do not read academic journals, and accused them of unwillingness to accept research findings, which directly challenge traditionally held beliefs and practices. This attitude of some academics appears to have changed little in the past 20 years (Hunt 1981, Phillips 1994, Hicks 1995, Nolan et al. 1998; and many others) and, for these writers, the solution to the problem of the theory-practice gap lies with practice moving closer to their own theoretical ideals.

Others recognize that a gap exists, but see it as inevitable and even as a positive sign, arguing that if practice is not lagging behind theory, then the profession is no longer progressing (Lindsay 1990, Cook 1991, Rafferty et al. 1996). Yet others see the gap not in terms of research-based theory being one step ahead of practice, but rather as being largely irrelevant to practice (Rolfe 1996). Thus, the reason for the gap is not that research-based theory is failing to be implemented by



practitioners, but rather that it is impossible to implement. Rolfe (1996) added that one of the dangers of seeing nursing mainly in terms of the application of research findings to practice is that a false sense of security is often engendered. In the words of Lawrence Stenhouse, 'it suggests that we may make wise judgements without understanding what we are doing' (Stenhouse 1978, p. 31).

The question to be asked is whether a more academic education necessarily produces better practitioners. The answer to this question is clearly linked to the issue of the relationship between theory and practice, and as yet there is little evidence to suggest that there is any benefit to patients as a result of Project 2000. While many nurse academics are condemning nursing practice based on folklore (Phillips 1994) rather than on the findings from research, they should perhaps look to their own practice of education, where the philosophy underpinning Project 2000 is itself arguably no more than an unsubstantiated assumption about the benefits of technocratic education (Bines 1992) and the 'yearning for the rigor of science-based knowledge and the power of science-based technique' (Schön 1997, p. 9).

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# Health care support workers in the critical care setting

*Martin Hind, Dawn Jackson, Clive Andrewes, Paul Fulbrook, Kathleen Galvin, Susan Frost*

## Summary

- The 1999/2000 winter demands on the NHS have once again highlighted deficits in UK critical care provision (Daily Telegraph, 2000; London Evening Standard, 2000)
- Recent years have seen the development of the role of health care support workers in the NHS; some critical care units now employ health care support workers
- This research examined the views of critical care unit staff on the introduction of health care support workers into the critical care unit
- It is concluded that the role is viable within the setting of this study
- A framework is outlined that could form the basis for a critical care health care support worker training programme

*Key words:* Critical care unit, Health care support worker, Intensive care resources, Skill-mix, Staffing

## INTRODUCTION

### Human resources in ICU

Following the development of intensive care as a separate speciality in the 1950s, there have been major advances in the technological aspects of patient care. This has resulted in a capability being developed within intensive care units (ICUs) to support or replace temporarily the failing vital functions of patients (Rapin, 1987). In its turn this advance has necessitated the development of a specialised nursing workforce.

In the Department of Health (DoH) survey of 'high technology' areas (DoH, 1989) intensive care units were found to be better staffed than other areas. Whilst there have been no recent studies, it seems that ICUs are generally well staffed; are supported by technicians; and make use of increasing numbers of nurses possessing specialist qualifications (Stock and Ball, 1992). According to Metcalfe and McPherson's (1994) one-day census, around 80% of senior nurses and 40% of staff nurses held ENB 100 qualifications.

In his editorial, Baldock (1995) highlights the tension between financial constraints and the pressures of tech-

nology, suggesting that 'all is not well with intensive care services in the UK'; the demands placed on intensive care units by the 1998/1999 winter influenza epidemic emphasised deficits in the system. This winter (1999/2000), the shortage of intensive care beds has again been in the news (e.g. Daily Telegraph, 2000), with the media quick to seize opportunities to highlight examples where intensive care units were not able to cope with the demand for beds (e.g. Daily Telegraph, 1999). A major newspaper editorial described the situation as 'scandalous' (London Evening Standard, 2000).

This is not the first time that the service has been challenged. In recent years, two audits of intensive care units, at regional level (Birmingham NHS Executive, 1994) and national level (Stoddart, 1994), have shown high rates of refusal or deferred emergency admissions due to resource constraints, and frequent transfers of critically ill patients between hospitals in the search for intensive care beds. Additionally, there is a serious shortage of facilities for intermediate care (Bion, 1995).

ICU manpower pressure includes the explicit requirement for a 1:1 nurse patient ratio, within the recent 'Guidelines on Intensive and High Dependency Care' (DoH, 1996). This is set against a backdrop of the need for maximum flexibility within these units during periods of peak demand. Critical care areas are further disadvantaged in that trained ICU agency staff are frequently unavailable and bank staff may not have the necessary training or experience to take over these roles. Thus the traditional solutions, used elsewhere in the NHS to offset peaks and troughs, are made less effective in the ICU setting; and the need for overtime working by experienced ICU staff has become the norm, resulting in stress, disillusionment and increased levels of sick leave (Ashurst, 1996). This is compounded by the national problem of recruitment in nursing and a lack of trained ICU nurses (Mason, 1995). Intensive care is one of the most costly hospital resources (Beattie and Calpin-Davies, 1999), with nurse staffing

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accounting for 75% of expenditure (Metcalf and McPherson, 1994) and Endacott (1996) suggests that a review of resources should address staffing skill-mix.

### High dependency care

To some extent, the demands on intensive care units could be offset with better use of high dependency units (HDUs) for less dependent patients. 'Specific patient groups benefit from a level of care between that of an intensive care unit and a general ward' (Harrison and Ellis, 1996). Use of HDUs enables a level of technical and nursing care to be delivered with staffing ratios at half that of ICUs, while a level of monitoring facilitating early intervention is provided that cannot be assured in general wards. However, HDUs are also expensive and are facing greater demands due to an increasingly elderly population undergoing complex resuscitation and major surgery (Nehra *et al.*, 1994).

Cardiac arrests in hospital and overall mortality have been shown to decrease with the introduction of high dependency units (Franklin *et al.*, 1988). However, only 15% of British hospitals have identifiable HDUs (Bion, 1995). These 'units' are sometimes additional beds situated alongside intensive care beds or in some cases exist as a separate unit. Wherever the facility is provided, the system will clearly operate best when there is good communication between the ICU and HDU, enabling a 'step-up' and 'step-down' service which optimises the staffing resources.

### The changing role of the critical care nurse

The recent Audit Commission report recognised the developing role of critical care nurses, in particular their increased responsibilities in decision-making (Audit Commission, 1999). A variety of factors has contributed to these changes. Professional policy change with the introduction of the *Scope of Professional Practice* (UKCC, 1992) liberated nursing practice from previous rules that had limited the activities nurses could undertake. This has resulted in an expansion of the traditional boundaries of nursing. Arguably, nurses are now more able to add to their core skills, developing their practice more broadly and enabling themselves to become more responsive to changing patient needs.

Politico-economic factors have also impacted on the nurse's role. The report entitled 'Junior Doctors - The New Deal' (NHS Management Executive, 1991) initiated the reduction of junior doctors' hours, and the Calman Report (DoH, 1993) recommended shortening specialist training for doctors. Arguably, it is the changes recommended in these reports that have prompted the expansion of many nurses' roles (Beattie and Calpin-Davies, 1999). Role expansion may lead to a blurring of the nurse-doctor interface as nurses take on more aspects of medical practice in critical care. Areas within critical care where this has been most noticeable are accident and emergency and neonatal intensive care, where there have been many examples of the development of nurse practitioner roles (Cooper and Robb, 1996; Dillon and George, 1997). Many of these new posts have been constructed around a core of medical tasks (McDougall, 1994) rather than nursing

values. New role development to offset the reduction in junior doctors' hours has frequently been supported by NHS 'task force' money.

Whilst it might be argued that a speciality such as intensive care lends itself naturally to an interdisciplinary approach, it is crucial that any alterations to the nursing role preserve the essence of holistic nursing practice (Endacott, 1996). However, it has been suggested that nurses in these areas have been influenced by the idea of gaining status through the acquisition of medico-technical skills (Neenan, 1997). This may be one of the reasons why many nurses have been quick to seize opportunities to take on roles based on the work of junior doctors. Within the context of these new roles there is a need for research, which evaluates their efficiency and effectiveness. In another study, conducted in the same critical care unit as the research described below, the expanded role of the nurse is explored further (Hind *et al.*, 1999).

### Health care support workers in critical care settings

Adding impetus to the issue of new and multidisciplinary working is a relatively recent report, which states that there is a compelling argument for a more flexible workforce and for an extension to the support workforce in acute sectors (Health Service Management Unit, 1996). In recent years, health care support workers (HCSWs) have been introduced into some ICUs, providing assistance with some aspects of patients' direct care needs, such as turning and hygiene requirements. They perform many non-nursing duties such as ordering and unpacking stores and pharmacy, cleaning bed spaces following discharge, and maintaining stock levels at the bed space throughout the shift (Neenan, 1997). However, there is a dearth of literature concerning the training requirements and effectiveness of health care support workers in the critical care setting.

Training for HCSWs is available up to National Vocational Qualification (NVQ) level 3, and it has been suggested by many that they may be delegated certain nursing duties not considered essential for nurses to undertake. It is argued that this should result in a more cost-effective use of nurses' time and expertise (Caines, 1993), allowing them to concentrate their efforts solely on their patients.

The discontinuation of enrolled nurse training and reduction in student numbers are major factors that have precipitated the demise of the untrained nursing auxiliary. Health care support workers, whose roles have expanded into the professional nursing domain, have replaced them. As with nurse-doctor boundaries, the HCSW-nurse boundary has now become blurred, and many nurses have lamented this release of the nursing role to professionally unqualified staff. A paper presented at a recent British Association of Critical Care Nurses conference (Roberts and Cleary, 2000), which reported a positive experience of the introduction of health care support workers in the cardio-thoracic critical care setting, stimulated heated debate. Many general intensive care nurses voiced strong views, with most opposing the



introduction, expressing concerns that HCSWs had inadequate education and training for what were regarded as areas of 'professional' nursing.

Some concerns have been expressed about unqualified staff working in critical care areas on the basis that nurses in these areas commonly accumulate medically orientated skills. Neenan (1997) worries that nurses' concentration on medico-technical skills and delegation of basic care to support workers may result in them becoming distanced from basic care and losing their essential skills.

In summary, there are clearly many critical care areas where the nursing role is changing and there are a number of driving forces. As nurses increasingly take on roles that were previously considered 'medical', it is almost inevitable that there will be a need for them to be supported by greater numbers of HCSWs and many nurses are concerned that this will diminish the holistic approach of professional nurses.

Set against the context described above, this study explored the attitudes of staff in one critical care unit towards an increased role for health care support workers within this field. At the time of the study, the unit did not employ health care support workers.

#### RESEARCH SETTING

The setting for this research is a critical care unit of a large district general hospital. The facility consists of an eight-bed adult intensive care/high dependency unit, of which five beds are intensive care and three are high dependency care; and a six-bed coronary care unit. In addition to serving local demands, the critical care unit provides for a large seasonal population of visitors and tourists and admits patients from other trusts in the region when bed shortages occur. It offers a flexible facility, catering for patients with all types of disease, and admissions average around 1,700 adults per year.

A directorate business manager and a clinical director manage the critical care unit. On a rotational basis, three consultant anaesthetists for intensive care and high dependency care and two consultant cardiologists for the coronary care unit share responsibility for day-to-day management of patients in the unit. At the time of the study, the total nursing staff complement for the critical care unit was 50 whole time equivalents, consisting of one senior sister, three sisters, 12 senior staff nurses and grade E and D staff nurses. The unit is supported by a full-time technician and a part-time clerk. With the exception of the sisters, who are based in a particular unit but maintain overall managerial responsibility for the critical care unit, all nursing and support staff work in both units on a rotational basis. Education within the units receives high priority and in-house training is provided for all junior staff. Support and teaching is also provided for post-registration students undertaking the ENB 125 (intensive and coronary care nursing) and ENB 100 (intensive care nursing) courses, and pre-registration students undertaking diploma and degree level training. At the time of the study no health care support workers were employed in the unit.

#### AIMS OF THE STUDY

There were two main aims for this study:

- to examine the attitudes of staff to the use of health care support workers in the critical care unit
- to explore the potential role of the health care support worker within the critical care unit.

#### METHODOLOGY AND METHODS

The methods employed for this research were considered within a guiding constructivist approach (Schwandt, 1994). In order to address the research aims, freedom to explore and probe was considered essential to obtain personal opinions, full information and for clarification of relevant issues. Data collection for this study was undertaken in two phases.

The initial phase was qualitative. Focus groups and individual interviews were employed as methods to explore participants' perceptions of health care support workers in the critical care setting. Focus groups were used to obtain data from nurses, and individual interviews were undertaken with support staff and consultant anaesthetists. Both focus groups and interviews were semi-structured, following a similar format. These methods were chosen for their congruence with constructivist methodology, which precluded the use of a standardised interview. The educational and professional backgrounds of the informants were varied and different people had different constructions of reality. The aim of this phase was to uncover new areas and ideas, which may not have been anticipated at the outset of the research (Britten, 1996). Thematic content analysis of the data, after Morse (1994), enabled clarification of issues.

In the second phase, a simple closed questionnaire was administered, relating to the role function of the HCSW. It identified specific activities that could be undertaken by a support worker, and nurses were asked to state whether each could be undertaken by health care support workers on their own; with the supervision of a nurse; or not at all. Following piloting with three nurses, a short four-point Likert-type scale indicating the strength of agreement with four statements (see Table 1) was also administered. Additionally, through an open-ended question, respondents were offered the opportunity to express their views about the development of a support worker role. The questionnaire was distributed to all nursing staff in the critical care unit.

All participants in the study were assured that

**Table 1. Likert-type statements**

- Nurses will have the time to develop new skills if a support worker was introduced to the unit
- It is very important that the support worker's role is clearly defined
- Support workers will require specific training to work in the critical care unit
- I think it will be important that the support worker is a valued member of the critical care team



confidentiality and anonymity would be maintained and informed consent was obtained. The local ethics group did not require formal ethical approval as the study was not directly concerned with patient care.

## FINDINGS AND DISCUSSION

Eighteen nurses, representing all grades, participated in the focus groups; five consultants and both the technician and ward clerk were interviewed. Thirty-five out of 48 nurses responded to the questionnaire, achieving a 73% return.

Thematic content analysis generated three themes: utilising staff appropriately; assisting and supporting staff; and working and developing as a team. These themes will be used to present findings and discussion relating to both phases one (exploratory phase) and two (refining phase) of the study.

### Utilising staff appropriately

Nurses in this study identified a number of activities, all of which were carried out on a regular basis, that they felt they could 'give up' in order to concentrate on direct patient care. As one nurse stated:

*'We are all busy, but I feel sometimes the kitchen gets left and when you are in coronary care you sometimes spend half an hour in the kitchen just clearing the crockery away, loading the dishwasher and you should be on the unit really with the patients. Other things such as making patients' tea, changing the water jugs, dishing out the meals, filling out menus, could all be done by a support worker.'* (nurse).

Medical staff, as in the following example, also supported this view:

*'ICU has got every aspect of nursing thrown in, such as looking after relatives, cleaning up, doing everything about the care of patients and you don't need to be a very highly skilled F grade to do some of those tasks. Those staff might be more usefully or more efficiently used.'* (consultant).

Even though the majority of participants felt that the introduction of an HCSW would increase efficiency in critical care, there were some concerns over the possibility of reducing the number of qualified nurses and the nurse's role being eroded. Medical staff also expressed this concern:

*'I don't think that they (support workers) should be taking on nursing roles. I assume nursing roles do not mean cleaning and stocking up, but with direct patient care, whether it be monitoring, instituting modes of treatment, ventilation or things of that sort. I would see their role as, for example, helping with turning, washing, that sort of classical, old style nursing care. In terms of actually looking after the patients' medical condition I don't think we should be relying on support*

*workers to take the place of trained staff in that regard.'* (consultant)

*'The introduction of a support worker may mean that you can effectively look after more patients with slightly fewer trained nursing staff, but it must not be allowed to erode the need for sufficient numbers of trained nursing staff. We mustn't get to the point where we have got two or three trained nurses supervising four or five health care assistants in critical care.'* (consultant)

Simple frequency analysis of quantitative data relating to clerical/housekeeping and patient care activities of HCSWs revealed several areas of contention. On the whole, nursing staff were more reluctant to support patient care activities than they were clerical/housekeeping activities; a range of which were supported by over 85% (n = 35) of nursing staff (see Table 2). Just over half of the nurses (56%) felt that HCSWs should be involved with ordering ward stock, but with supervision by a nurse. Although most nurses (71%) felt that support workers could respond to general enquires without help, 23% thought this should be under nurse supervision. A similar response was found in relation to audit and data collection. About a third of nurses (31%) thought that HCSWs could be involved with arranging staff cover with nurses' help. However, the majority (60%) felt that this was not within the remit of health care support workers at all. Nurses were fairly evenly split regarding the maintenance of equipment: 37% felt support workers were capable of doing this alone; 35% thought it should be shared with a nurse; and 38% felt that they should not be doing it at all.

There was a range of patient care activities that the majority of nurses believed HCSWs could undertake unsupervised: urine output measurement (61%) (n = 35); eye care (61%); mouth care (57%); bed-making (80%); talking with relatives (97%); supporting relatives (86%); preparing patients' meals (89%); preparing patients' drinks (91%); and feeding patients (91%).

A number of activities were identified which the majority of nurses felt health care support workers could perform under supervision: transferring patients (77%); turning patients (91%); washing patients (71%); and lifting patients (85%).

Nurses' views were split regarding some activities. Over half (52%) of nurses felt that health care support workers could only prepare and dismantle dressing trolleys under supervision whereas the remainder felt they could work

**Table 2. Clerical and housekeeping duties supported by nursing staff**

- Answering the telephone
- Answering the door
- Using the computer
- Filing results
- Organising patients' notes
- Stocking up
- Cleaning: bed spaces, kitchen, sluice, equipment, general tidying
- Recovering equipment
- General errands



alone. A third of nurses (34%) thought that HCSWs should not prepare transducer sets unaided, whereas the remaining two-thirds were split equally between feeling it was appropriate if done under supervision (34%) and feeling that it should not be done at all (32%). Although the majority of nurses (77%) felt that HCSWs should be assisting doctors, (34%) thought this could be unaided whereas (43%) thought it should be under supervision, and 23% thought they should not be assisting at all.

A sufficient number of activities were identified which would complement rather than oppose the nursing role. These can be broadly defined in four key areas:

- administrative/clerical
- communication
- patient-care
- household.

Within each of these areas there are some activities that health care support workers may undertake alone and others that require supervision by a nurse (see Table 3).

### Assisting and supporting staff

In phase one, participants were asked how they felt about the role of the health care support worker and to identify skills and activities appropriate for this role. All participants identified certain clerical and housekeeping duties as areas where a person who was not a trained nurse could assist or undertake tasks alone. Clerical tasks included filing, operating the computer and photocopying material. Housekeeping duties included a broad range of activities such as cleaning, preparing drinks, giving out meals, re-stocking and responding to general enquiries on the telephone and at the door. Participants felt that many of these activities took up valuable time that they could be spending with patients or that some of the non-nursing tasks could be neglected if the unit was very busy or understaffed. One nurse felt that a person other than a nurse could assist with some of the paperwork on the ward:

*'Well, I feel we could have somebody there to look after a lot of the paperwork, take it off the nurses' shoulders.'*

*'They seem to do a lot of repetitive paperwork, especially near the end of a shift when there is a lot going on.'* (nurse)

Both nurses and medical staff felt that sometimes they spent too much time undertaking activities that were not patient-related and that a person who was not a trained nurse could carry these out:

*'You find you spend an awful lot of time on the telephone. I mean just sort of silly things really, like for instance 'phoning up people to come into work if you are short staffed. I mean it doesn't take a trained nurse to do that and yet you can spend a good couple of hours 'phoning around. Your time could be devoted to patient care.'* (nurse)

*'You don't need nurses for the basic chores, talking to relatives, looking after them and providing comfort. Comforting patients, holding hands and so on, just being there when the nurse is busy doing nursing activities.'* (consultant)

One of the Likert-type questions revealed that all nurses agreed that they would have more time to develop new skills if a support worker was introduced to the unit. Cleaning and general tidying of the ward was seen to be an ideal activity for a support worker, to ease the workload of nurses and to ensure that areas such as the bed space, kitchen and sluice were regularly cleaned. The majority of participants discussed the importance of keeping the ward tidy and felt that they often spent valuable time carrying out these tasks.

All of the participants agreed that there were a variety of tasks which could be undertaken by a support worker without direct supervision from a trained professional; however, there were differing opinions when discussing the support worker's role and patient care. Some staff members felt that a trained nurse should take full responsibility for patient care, whereas others believed that there were some aspects of care, which could safely be carried out by a non-professional. The majority of participants agreed that there were certain patient-related

**Table 3. Key areas of activity for health care support workers**

Administrative/clerical activity		Communication activity	
Supervised:	Unsupervised:	Supervised:	Unsupervised:
<ul style="list-style-type: none"> <li>• Ordering stocks</li> </ul>	<ul style="list-style-type: none"> <li>• Organising patients' notes</li> <li>• Audit/data collection</li> <li>• Filing results</li> <li>• Using the computer</li> <li>• Stocking up</li> <li>• General errands</li> </ul>		<ul style="list-style-type: none"> <li>• Answering the telephone</li> <li>• Answering the door</li> <li>• Answering general enquiries</li> <li>• Talking with patients</li> <li>• Supporting relatives</li> </ul>
Patient care activity		Household activity	
Supervised:	Unsupervised:	Supervised:	Unsupervised:
<ul style="list-style-type: none"> <li>• Washing patients</li> <li>• BM stick analysis</li> <li>• Lifting patients</li> <li>• Transferring patients</li> <li>• Assisting medical staff</li> </ul>	<ul style="list-style-type: none"> <li>• Mouth care</li> <li>• Eye care</li> <li>• Urine output measurement</li> <li>• Assisting with meals</li> <li>• Assisting with drinks</li> <li>• Feeding patients</li> <li>• Bed making</li> </ul>	<ul style="list-style-type: none"> <li>• Preparing and dismantling dressing trolleys</li> <li>• Maintenance of equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Cleaning bed spaces</li> <li>• Cleaning the kitchen</li> <li>• Cleaning the sluice</li> <li>• General tidying</li> <li>• Cleaning &amp; recovery of equipment</li> </ul>



tasks that a support worker could undertake under supervision. These included eye and mouth care, general hygiene and repositioning patients. All of the nurses agreed that a support worker could assist a trained nurse in many aspects of patient care and this would save both time and resources. However:

*'With things like washing and mouth care and eye care, it is not as easy as it sounds because when you have somebody with an ET tube in and somebody with oedema in their eyes you have got to be trained to do this. A support worker would have to be properly supervised until you know that they can do it.'* (nurse)

*'I feel washing the patient is quite an important aspect of our care. Certainly, in the coronary care situation I feel that when you are giving somebody an intimate part of care like that, then it is often the time that the patients start talking to you about other worries; which you are trained to deal with.'* (nurse)

The employment of support workers within the nursing service has been discussed and debated over the past decade, with much of the literature focusing on the reasoning behind their introduction: overcoming professional nurse shortages (Chang, 1995); efficiency and cost-effectiveness (Dewar and MacLeod Clark, 1992); and assisting in replacing the student work force (Bailey, 1991). There is very little written on the role of the support worker in relation to patient care, particularly in critical care areas, however there is evidence to suggest that concerns exist over non-professional staff undertaking unsupervised patient care (Savage, 1997).

Elliott (1995) states that, once HCSWs are in place, many nurses will readily allocate basic nursing care to them despite the fact that they may have previously been sceptical about their introduction; these tasks could include direct patient care such as general and oral hygiene, incontinence care and feeding. Savage (1997) states that basic nursing activities should not be allocated to unqualified staff, arguing that it 'demands high levels of clinical knowledge and expertise'. Some of the participants in the focus groups did have very similar views and felt that any activity which involved direct patient care should be undertaken by a trained nurse; however, it was generally felt that a support worker could assist in this process:

*'I feel that we need a certain individual to help us with care for the turning purposes and assisting with the wash itself, but we are there to ask the appropriate questions and be able to answer any.'* (nurse)

*'They (support workers) could certainly assist a trained nurse if that nurse was happy with that, but they would be in charge and have to decide what limits they could take.'* (consultant)

Participants in all of the focus groups expressed some concerns about the role of the support worker in relation to patients' relatives, although no evidence exists in the

literature that highlights these concerns in a critical care setting. The majority of participants in this study discussed the benefits and problems of allowing a support worker to have direct contact with relatives. Some staff felt that it would be inappropriate for a support worker to be in a position where relatives may expect to be fully informed, believing that this could cause relatives further distress. As one nurse stated:

*'It is difficult, because I think caring for relatives is all part and parcel of our actual training and our role. I think relatives can sometimes be more difficult than the actual patients to look after but I think you need the training to be able to do that.'* (nurse)

One participant explained that care must be taken with support workers when giving information to relatives, as many relatives want to know 'the ins and outs of everything'. It was felt that initial 'are you OK?' and 'let me show you round' types of approach would be perfect for a support worker, to 'get relatives settled' and ensure they are not on their own. If questions are asked which a support worker cannot answer then it is vital that they can refer to the appropriate member of staff. As one nurse justified: "If we can't answer a question, then we find someone who can".

All of the focus groups discussed the possibility of having a person who could provide support and comfort to relatives rather than their being left alone:

*'A support worker could provide some sort of support to relatives, not on clinical issues but just as somebody to talk to as an "ear".'* (nurse)

*'A support worker could make cups of tea for relatives, if they have just had bad news. I find that sometimes it is difficult because you want to go back on the unit and at the same time you want to support those relatives just with a cup of tea. I mean it is good to give them that support, but sometimes you are needed back on the unit.'* (nurse)

When discussing the role of the support worker in critical care, it was apparent that most respondents agreed with the introduction of such a worker. However, the majority felt that the role had to be clearly defined (89%) and that each support worker must understand the boundaries within which they would carry out their duties.

'The introduction of new categories of workers to assist the nurse requires the development of a clear job description to distinguish their role from others and to identify those areas where overlap of activities may be appropriate' (Chang, 1995).

Participants in this study made it very clear that a support worker should keep to strict guidelines and, if and when it was necessary to cross the boundaries of nursing, it would be under supervision with the correct training having been implemented. Overall, 83% of nurses felt that specific training would be necessary.

The literature, as well as the participants in this study, includes discussion of concerns over allowing support



workers to cross nursing boundaries as they may want to assume more and more of the nursing role, aspiring towards care at both basic and advanced levels (Elliott, 1995). One nurse expressed this concern:

*'I think you have got to be careful, it's like the extended role and the NVQs on the wards. All of a sudden you have got health care support workers saying 'I'm not doing that, I'm off to do this and that' and then it becomes a grey area as to where their responsibilities are defined. You have to be a bit careful because when you need them for washing or to get someone off the commode, they may say 'No, I'm doing an ECG!' You have got to be very careful.'* (nurse)

The Department of Health in Ireland (Irish DoH, 1996) has offered some useful guidelines that divide patient-related activities into two broad categories, those activities to be undertaken at the direction of a registered nurse and activities assisting a registered nurse. The first category includes activities such as feeding patients, bed bathing and oral hygiene. Some examples of activities listed in the second category include incontinence care, stoma care and pressure sore prevention and care. As with this study, the literature supports the role of the HCSW as an assistant in direct patient care and has concerns over delegation of nursing activities. A further implication of the introduction of the support worker is that all staff in critical care need to develop a consensus view on the intended role before it is implemented, and – if it is necessary to extend that role – to ensure that the correct training and education is accomplished. As the support worker is seen to be under the direct supervision of the registered nurse, it has been suggested that nurses should not only determine their role and activities, but should also be involved in their selection and training (Sullivan and Brown, 1989).

As technology rapidly develops within intensive care, the role of the intensive care nurse has been presented as being composed of both technological and humanitarian aspects, with nurses having to take responsibility to balance the two (Endacott, 1996) and being under increasing pressure to justify their value in the healthcare market (Woodrow, 1997). The 'New Deal' for junior doctors (NHS Management Executive, 1991) and the UKCC's *Scope of Professional Practice* (UKCC, 1992) have raised awareness for the development of new nursing roles; nurses are expected to be flexible professionals who are willing to develop in response to changing demands in practice.

It was apparent that all staff, both nursing and medical, felt that certain tasks should not be carried out by qualified nurses. By 'freeing-up' this time for nurses, it would allow them to concentrate on special skills; developing their role was crucial. However, many staff identified concerns about the erosion of the nursing role causing a reduction the quality of patient care.

Participants generally felt that the introduction of a support worker may save both time and resources, but expressed concerns about giving too much of the nursing role away. This, they felt, would be detrimental to the future of the nursing profession.

Biuso *et al.* (1992) identified certain non-nursing tasks that were undertaken by registered nurses in critical care, such as emptying linen and rubbish, cleaning equipment, washing beds and collecting supplies from other departments. Hamm-Vida (1990) found housekeeping and transportation to be the non-nursing activities most frequently undertaken by nurses, and Hendrickson *et al.* (1990) postulated that nurses would gain up to 10% more time for essential nursing tasks if they could lose the non-direct patient care activities.

Savage (1997) reports that the principal reason for introducing support workers is cost-effectiveness. She continues by stating that 'there appears to be no substantial evidence however to support the view that the replacement of nurses by less qualified personnel saves costs'. Costs need to be considered not only in financial terms but also in terms of the quality of patient care. Studies in the UK and the USA have shown that qualified nursing care improves patient care outcomes (Savage, 1997). It also improves quality of care and saves money in the long term (Buchan and Ball, 1991).

The findings in this study show that support workers are perceived as invaluable in relieving nurses of many non-nursing duties such as housekeeping, clerical and catering tasks, and in terms of cost effectiveness this allows nurses to be free to spend more time in direct patient care. The implications of this are that the roles of both nurses and support workers must be clearly defined.

#### Working and developing as a team

Participants in this study agreed that if support workers were introduced to the unit, then it was important that they were integrated into the team. The majority of nurses (74%) felt that it was important that the support worker was a valued member of the team. As well as understanding each other's roles, nurses, support workers and medical staff need to be able to assist each other in order to provide quality, unfragmented care for patients and their relatives. A nurse explained:

*'I help out where's needed. I think the team should work together and you just fall in when needed. If you did have somebody like a support worker and something cropped up then they would just get "stuck in".'* (nurse)

Results from one of the Likert-type questions show that all nurses agreed that it would be important for the HCSW to be a valued member of the team. When discussing delegation of tasks, one participant talked about the importance of working together, which also served as a learning experience for both the support worker and the nurse and provided a level of responsibility:

*'They (support workers) should act as part of your team and work with you in your total patient care, rather than just doing the dirty work that you don't want to do... they would need to feel integrated in looking after the patients holistically.'* (nurse)

Concerns were raised in each of the focus group discussions regarding responsibility and accountability.



Some staff members expressed concern about who would be accountable for the actions of a non-qualified health worker, especially if that person was caring directly for patients. The UKCC (1992) *Scope of Professional Practice* states that qualified nurses should maintain accountability for the activities of support workers and for their development and supervision. Chang (1995) reports that the nurses' acceptance of the support workers' role is likely to be influenced by the concerns they have over accepting responsibility for them in the duties they perform. Participants felt that as long as they and the support workers were clear about the new role, and that the training was thorough and appropriate, then any concerns surrounding who takes responsibility would be minimised. This was emphasised by one nurse who stated:

*'All staff would need the right training with quite tight parameters, especially for the support workers. They would have to be part of the team but their training would have to be quite specific so they knew exactly what was expected of them.'* (nurse)

A common theme that occurred, throughout phase one, was the need for shared learning and continuing education for all staff, which would include the support worker if that role was to be introduced. The majority of participants felt, that if new roles were defined and understood, then shared learning could take place. Areas that were identified included education between nurses, physiotherapists, support workers and doctors. The general opinion was that the majority of learning should take place on the unit, however formal teaching sessions either in-house or at the university should also be included.

The majority of participants felt that support workers should aim to work towards a recognised qualification, which would increase motivation and provide personal satisfaction for the individual. Results from the Likert-type questions, in this study, showed that all nurses agreed that it is very important that the HCSW's role is clearly defined and that they would require specific training. Health care support workers are being encouraged to undertake the NVQs in care (Mangan, 1995) and this would be an option for the support worker in critical care. The NVQ framework would offer education that is directly related to the real needs of the workplace and the individuals concerned.

## CONCLUSIONS

The findings from this study suggest that the role of the health care support worker in this critical care setting is viable and the introduction of this role would be supported by the majority of staff, in particular the nursing staff. Their agreement to the development of an HCSW role is important, as it would be the qualified nurses' responsibility to provide the day-to-day supervision of such a worker.

The activities described in Table 3 could form the basis of a job description for health care support workers in

critical care areas. However, it is clear, from the findings in this study, that clarity of role and definition of parameters would be required. Any such role would benefit from a specific training programme in order to ensure its success. Since there is no published literature available that describes such a programme in the critical care setting, a new one would have to be designed. Whilst the activities described in this study might generate the core elements of such a programme, it is important that competence and skills should be underpinned by appropriate knowledge. To this end, it may be possible to derive specific competencies from existing occupational standards within the NVQ framework. For example, there are many operating department NVQ standards, which could be readily applied to the critical care setting. Due to the variety of critical care units in the UK, this core of competencies may need to be supported by a range of locally determined competencies.

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# On the receiving end: a hermeneutic-phenomenological analysis of a patient's struggle to cope while going through intensive care

*Les Todres, Paul Fulbrook and John Albarran*

## Summary

- This is the story of Anne (not her real name), an intensive care nurse who was admitted to intensive care on three occasions during which she experienced disseminated intravascular coagulation (DIC) and septic shock, and required endotracheal intubation and artificial ventilation
- Following a broadly hermeneutic-phenomenological approach the authors analyse her experiences, which were obtained by an in-depth open-ended interview
- Data analysis revealed several major themes which are described in detail, using verbatim examples
- The implications of Anne's experience for nursing practice are analysed in relation to the literature

*Key words:* Intensive care, Patient recollections, Phenomenology

## INTRODUCTION

There is much that nurses can learn by listening to patients' stories. No amount of scientific research can say enough, in sufficient detail, to capture the essential reality of an individual's experience. In matters of human experience there is always more to say and the hermeneutic tradition (Gadamer, 1975) conceives of such enquiry as ongoing conversation in which the last word is never finally said. A crucial and essential foundation of this approach is to begin by telling the meaningful stories of informants. This can be a very powerful means of communication, creating a vivid picture of the reality of an experience. To some extent, this was successfully achieved in a series of articles previously published in *Nursing in Critical Care* (Fulbrook *et al.*, 1999a; 1999b; 1999c), which presented an intensive care nurse's recollection of her experiences when her husband was admitted to the intensive care unit (ICU) where she worked. In pursuing the theme of learning through the experiences of others on the receiving end of intensive care, this paper documents another intensive care nurse's experiences – this time as a patient.

## METHODOLOGICAL APPROACH

Aron Antonovsky (1979; 1996), a health sociologist, developed an approach to understanding the conditions of health, which he called salutogenesis. Instead of asking the traditional question, what are the causes of disease?, he turned the question on its head and asked, what are the causes of health? He was amazed that human bodies remained healthy as long as they do and posited that open systems (within which he included human beings), as well as closed systems, were characterised by imminent forces of entropy (falling apart). In this view, it is not 'falling apart' that needs to be explained as much as the ability of systems, organisms and communities to retain a degree of coherence in spite of these forces of entropy. He was particularly interested in studying populations of people who, in spite of living in environments not conducive to health, still managed to cope emotionally and physically in a way that appeared positively to enhance their health status. Antonovsky understood such 'managing to cope' as being the result of an individual's or community's struggle to achieve a sense of coherence.

It is this struggle to achieve a sense of coherence that may be particularly descriptive of patients going through an intensive care experience. Such a journey is full of forces of entropy, of falling apart. The struggle to make sense of the experience and to hold on to something familiar, coherent and humanising is challenging, to say the least.

Qualitative research addresses the research dilemma, described in the introduction, by using 'thick description' (Holloway and Wheeler, 1996) and research subjects' own words to ensure that it is their own (emic) perspective which is portrayed, rather than that of the researcher. Nevertheless, the researcher will always, to a greater or lesser extent, influence both the collection of data and its analysis; 'qualitative researchers reject fundamentally the

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notion of objectivity' (Sarantakos, 1998). Whilst it is important, in qualitative research, to ensure that the voices of research subjects are faithfully represented, it is of equal importance that their views are interpreted within a wider context: what meaning can be given to their experience? The trick is to get the right balance between description and interpretation.

Nursing as a profession is a great borrower from other disciplines and nurses have learned much, which has been applied to practice, from others. By virtue of the fact that the informant in this paper is an intensive care nurse herself, her experiences have already been processed (by her) in a different milieu from that of a lay person, who is not conversant with the world of intensive care. In other words, she was better able to understand the events that unfolded during her periods of critical illness. In one way, this raises major concerns for those of us who practice in intensive care, since despite Anne's knowledge and experience she still often felt frightened, bewildered and out of control. What then must it be like for patients who know nothing of our world?

Anne's story was told through an unstructured interview and, so that we might make sense of it, has been interpreted from a psychologist's perspective (LT). In order to achieve a balance between faithful description and legitimate interpretation, Anne's own words have been used to describe her experiences wherever possible, in order to deepen insight into the concerns and needs of someone during this marginal phase of life. Most of the extracts from Anne's interview relate to her first ICU admission, which for many reasons was probably the most traumatic for her.

Following a broadly hermeneutic-phenomenological approach, an in-depth, open-ended interview (Kvale, 1996) was conducted with Anne. Such a retrospective approach is consistent with the phenomenological aim of showing the meaning of an experience within an individual's ongoing life history (Van Manen, 1990; Giorgi, 1985). Consistent with a hermeneutic approach, the interview protocol is explicated in such a way that the most compelling textures and meanings of the experience can be constructed (Todres, 2000). This involves an interpretive endeavour in which some of the researcher's personal insights on engaging with the material are shared. Although the interview reflects just one patient's experience, it may provide insights that carry possibilities for a deeper understanding of others in similar contexts. Within this spirit, 'narrative truth' (Polkingthorne, 1998) is seen as an important complement to studies which pursue 'statistical truth'. It is stories and their meaning that have always been intimately connected to an understanding of happenings in a human world with all its interrelated textures, moods, sequences and qualities. Some thoughts about the value of engaging in such narrative description and interpretation for nursing practice are provided in the conclusion.

#### THE EXPERIENCE UNFOLDING

Anne has been admitted to an intensive care unit on three occasions. As an intensive care nurse with several years'

experience caring for patients within this context, she was able to reflect on the intensive care experience from both sides, providing a unique perspective from which to consider both the human and technical needs of patients undergoing intensive care treatment. Her experience of the intensive care situation as being both a technical and human dilemma is moving and instructive. What follows is an attempt to reflect faithfully some of the main themes and meanings of her experience. Consistent with the hermeneutic-phenomenological approach, the central themes arose by means of a disciplined reflection in which the researcher read and analysed the transcribed interview and engaged in a 'back and forth' movement between the details of the informant's expressions and the way in which these details cohered into 'wholes'. Such a movement between 'whole' and 'part' has been referred to as the 'hermeneutic circle' and reflects how meaningful themes have to be both faithful to the details of a text but also offer understandings that may helpfully organise such details. In separating a descriptive phase from an interpretative phase, the reader may judge whether the interpretation is helpful and leads to further understanding and imaginative thought. Each brief descriptive theme is followed by an essential interpretation, which attempts to highlight a crucial meaning of that phase of the experience.

#### THE SEQUENCE AND MEANINGS OF THE EXPERIENCE

Although the themes could be expressed in other ways, their meanings essentially communicate the following struggles and experiences:

- 'Coming to terms with people and things that 'know' better than me about how I am'
- 'The dilemma of others knowing *how* I am but not *who* I am'
- Entering a 'twilight world'
- The frightening nature of breathing problems
- 'I did not know what to do with myself'
- 'All I was saying was ...': the frustration of not being understood
- Ambivalent feelings during the weaning process
- The importance of having an advocate
- Sleep and sedation
- Fear and thoughts of death.

#### Coming to terms with people and things that know better than me about how I am

*I'd been in hospital for about a week with a kidney infection and I was discharged home from that admission. Then I just became more unwell at home ... I was re-admitted on a Friday, poorly, dehydrated ... we carried on over the next few days and ... nothing would happen from one day to the next ... then on the Thursday I became more ill than I had been, the vomiting came worse and I developed a high temperature ... during the Thursday evening, my blood pressure began to drop, I was becoming tachycardic and my temperature was getting higher, and I'd started vomiting - not*



*blood – but there were bits of blood in the vomit. So that I thought there was something wrong with me – but I wasn't unduly concerned.*

Anne initially spoke of the first time that she was admitted to the intensive care unit. She had been in hospital with a kidney infection, and later developed pneumonia. Although over the next few days her symptoms became worse, she did not feel unduly concerned. At this stage, she was aware of nurses monitoring her condition in a rather 'professional' and 'distant' manner, engaging in technical as well as 'comfort' tasks such as arranging her pillows and changing her position. Anne was able to normalise both the worsening of her symptoms and the increase in technical monitoring procedures by drawing on personal knowledge of kidney infection. Such self-understanding was challenged when she started vomiting bits of blood but she still managed to find possible explanations that were somewhat reassuring (effects of recent medication and eating pattern). Such self-interpretation was also aided by the fact that she did not feel that she was particularly sick. A change in her perception of herself occurred in a fairly abrupt manner.

*... and then it got to a stage where I was having Gelofusine infused into me ... I can remember there was an awful agency nurse who kept coming and tipping the head of the bed ... I was on one of those Dynamap [blood pressure monitors] ... she just kept coming and tipping the head of the bed, and the Sister would come round and straighten my bed out, 'cause I hated it, and then she'd come along, look at the Dynamap and tip the head of the bed again ... and this went on until night staff arrived and then all of a sudden the registrar that I was under arrived back in, so I thought there must be something going on there.*

A registrar arrived together with a number of other doctors and nurses and Anne began to wonder what was going on. The impact of this experience is captured in a memory that no one was talking to her at this stage. They were talking to one another and appeared worried about her. This moment appears to constitute an important transition in which her self-understanding was interrupted by a more technical atmosphere in which other people and things (machines) 'knew' better. The registrar told her that he would like her to be admitted to the ICU and explained this to her in general technical terms that she understood.

*... it wasn't until he told me that I had DIC (disseminated intra-vascular coagulation) and he wanted me to go intensive care that I realised I was that sick.*

She became afraid and asked a number of questions in order to try and process this new development. This defined a new moment for her of 'being really sick'. Up to this point she felt that she had avoided the thought that she was septic, and what this meant, even though it was always there as a theoretical possibility.

### **Essential interpretation**

A transition occurred fairly quickly in which a more authoritative and objective definition of her condition came to light. This was the beginning of an experiential task of coming to terms with partially relinquishing reliance on her own thoughts, feelings, and sensations as primary sources of knowledge about her condition. Her feeling of 'not being talked to anymore' describes the interpersonal quality in which she, of necessity, needed to be defined in terms of technical, life-threatening meanings. However, she appeared to associate this with a greater sensitivity to its interpersonal context. In the next section she went on to describe an early struggle against a feeling of aloneness, depersonalisation and the importance of simple human contact. It is this simple human contact that appears to have been important in helping her manage the necessary transition to a sense of personal identity in which one's very life becomes a technical problem and where other meanings recede into the background.

### **The dilemma of others knowing *how* I am but not *who* I am**

*... I'd worked with him, I didn't really know him so well, and he was very good 'cause he just walked straight past all the doctors and came and sat on the bed, and held my hand, and started talking to me ...*

A doctor whom she knew more personally arrived. She felt able to talk with him about some of her concerns, fears and wishes regarding the prospect of entering intensive care and she felt reassured by a sense that he had some sense of *who* she was. This enabled her to reclaim, to some extent, a sense of being a collaborative participant in the process. Such a sense of human contact was, however, tenuous in that she was highly sensitive to any changes of attitude or behaviour in this doctor.

*... well I wasn't angry with him, but I did feel like saying, 'well you're really nice to me one minute ...' because in the next minute he said, 'oh you've barely got any veins in your hand' ... because they couldn't, hadn't been able to get any lines in ... and he immediately put a grey venflon in my foot ... one minute I suddenly thought, oh here's somebody, here's somebody who's a friend for me ... because everybody by that stage – nobody – was talking to me, they were all talking amongst themselves, and he'd come and made that contact, and then immediately switched into 'doctor trying to save my life' ... I had nobody with me, I just wanted somebody to say it's going to be OK, or to just sit there and hold my hand, that was what I felt I needed. He started that, but then obviously he couldn't [continue].*

He became a powerful bridge in her struggle to integrate the technical and human dimensions of the experience. There were times at this phase when she felt that her human struggle was being neglected. This struggle involved her fear of losing the ability to express herself once she was intubated:



*I think any intensive care nurse – that's your fear – being intubated ... it's so upsetting ... at that time I still had control ... it's just the fact that once that happens, you've got no say, and having worked in intensive care, that patient then has got no say in anything that happens to them – everything is just taken away.*

Anne knew that once she was intubated she would have no say in what happened to her. This was an important moment for her but technical procedures were required rather quickly and this became the emphasis of all those around her. The doctor whom she knew helped to talk her through some of the prospective technical procedures that would shortly occur:

*... although I knew what was coming, I need, still needed somebody to say, 'I know' and [the registrar] was very good and talked to me all through it.*

### **Essential interpretation**

In this phase there is a struggle to process emotionally the implications of being very sick. This requires much more time than is technically possible. When medical decisions and procedures are paramount, 'who Anne is' became a background issue out of necessity. Yet it is at precisely this moment that her sensitivity about who she is became heightened. Here a small amount of information about the process, some reassurance and simple human contact would have 'gone a long way'. In such a life-threatening, marginal situation it is a strange and difficult challenge to come to terms with the ambiguous experience that others who know most about *how* one is, may know little about *who* one is. It would seem that such ambiguity cannot be realistically avoided. Coming to terms with this inevitability is a psychologically challenging task in a time that could not be tighter.

### **Entering a twilight world: 'I was just so tired that I did not care what they did to me'**

*I remember going, remember being 'bed one' in the corner – and being transferred onto the bed, and then immediately electrodes being put on. [The senior registrar] said he was going to put an art' line in. I can remember him doing that, and then he said 'I'm gonna have to put a central line in' ... they were getting me all ready for that, and they had put oxygen on me by then ... they laid me down, and then I was covered up with the sheets, which was really horrible. But there was a very nice nurse, who held my hand a lot, and talked to me. I didn't know any of the nurses, but she was very – just very calm, holding my hand and explaining things ... as if I didn't know ... because although I knew what was coming I still needed somebody to say ... I can remember [the senior registrar] told me he was going to put a swan introducer in as well – in case – and I was like ... and then I felt that there was something they weren't telling me. I thought, the central line I can cope with, because I thought well I've got to have a central line, I've shut down, in fact I've only got one grey venflon in, and I could rationalise that in my brain. You sort of like just cope with it.*

It was helpful to Anne that a nurse was holding her hand and talking her through the procedures. It also helped her that, as a nurse herself, she could understand something of what was going on. She was able to make some sense of the strange and unpleasant sensations and sounds but felt frightened when noticing blood during insertion of the central line:

*The central line ... lignocaine going in again, you feel that, and then it's just a shoving ... I could feel blood ... I could feel all this warm blood around about my head, and I can remember saying, 'Oh I'm bleeding,' and [the senior registrar] said, 'Well don't you know, you'll be all right, you're not too bad it just feels worse than it is'. But I can remember it all pooling at the back of my neck, and the shoving – and the swan introducer was worse.*

She was relieved when this phase was over. Afterwards, she was asked whether she would like her husband to be there. She declined as it was late in the night. She was however, reassured that he was being kept informed about her. Later, she was told by the doctor she knew that she would need to go on a ventilator before the night was over. She initially resisted this but after some inner struggle, resigned herself to its inevitability.

*[The senior registrar] kept coming over and telling me that I was getting more and more septic, and that he felt that before the night was out I'd have to go on the ventilator, and I was just like, NO! NO! They kept coming and taking gases, and going off and coming back, and, and then he just came to me and said that I needed to be intubated now ... now that was very frightening because I didn't feel – my breathing didn't feel – I wasn't struggling or anything. I did feel ill and things, but it was just all very ... weak – by this stage I was just so weak I couldn't do anything, and I think that's why when, by the time he came and said that, you know, it was either now calmly or ... I was quite resigned to it. I gave up really ... although I can't remember having difficulty with my breathing, and I don't think I did, I was just incredibly tired, just so tired that I didn't care, in a way I didn't care what they did to me ...*

For Anne, the process of being intubated was one of a series of uncomfortable and painful sensations, of strange sounds, of being 'covered up' and of different things being inserted:

*I was very frightened ... and I still had the nurse who was holding my hand and talking to me ... it's still a shock to feel something shoving ... and it felt like a drainpipe ... you can really feel it shoving right down. So it was really quite a weird, there was no pain, you can feel it's sort of like you know, coming down through your neck and into your chest, which wasn't very pleasant. And then all of that was sort of finished with and then ... it was over and I was there topped up with oxygen ...*



Anne was ventilated. Her husband kept in touch with the ICU by telephone. She felt tired and weak. She just wanted to go to sleep. The nurse who had been holding her hand, continued to do so. Anne felt drowsy, and does not remember anything else from this period apart from being very scared.

### **Essential interpretation**

In this phase Anne is taken over by events and activities which require a more complex kind of endurance than that of simply being very sick. Life support procedures themselves require endurance – adjustments to sensations and physical constraints that are uncomfortable and painful. There are ambiguous meanings here: on the one hand, the body tacitly wants to resist what feels alien and unnatural, whilst on the other hand, the mind understands to some degree that this is not only help but lifesaving help. When the nurse holds the hand of the patient during this time, it represents a tacit joint understanding of this very human and marginal ambiguity: the situation has got to the stage where help itself has become a necessary suffering and there is no saving from this. In our hand-holding there is at least a human recognition of the poignancy of this. Even beyond the chemical sedation, there is a psychological resignation and tiredness in entering this twilight world where life is marginal and neither flight nor fight make sense.

### **The frightening nature of breathing problems**

*... for the next few days I was obviously totally out of it. Well, I don't remember anything, but my husband and my parents told me that there was certain things that I obviously didn't like and caused me discomfort. I didn't like being turned and would pull faces ... I was apparently on quite a lot [of morphine] ... they said even then I was still waking up and looking at people ... my mum told me, there was this one doctor who whenever he came towards the bed – she said she doesn't know quite what he done to me – "But, you would instantly open your eyes and give him the filthiest look as if to say, 'DON'T!' It was really like, 'DON'T YOU TOUCH ME!'" That sort of thing. But I don't remember any of that.*

For the first few days, Anne felt 'out of it'. She can remember that her husband and parents were there at certain times and that a sense of background discomfort was heightened when a nurse would move her or engage in necessary procedures. Of particular frustration was the fact that she could not indicate her needs and preferences (such as the way she was being turned and different styles of doing this). She was in and out of consciousness for a while but when she 'woke up' she experienced this as a sudden awakening:

*... it was like, you know, if you wake up in the middle of the night, because there's been a really loud bang or something ... It was total like shock and, and sort of like – you know if you're on nights, and you get woken up – and for that minute you know you've suddenly been woken up – you don't know quite what's woken you up*

*and you don't quite know where you are, or what time it is. It feels like, very much like that.*

She did not initially know where she was, felt the tube inside her, and wanted to take it out. Someone stopped her. It felt like they were shouting at her. There was a sense that she was fighting and a feeling of being 'pinned down'. The memories then fade and Anne presumes that she was re-sedated.

The next time she awoke she was 'in a state of shock'. She was coughing and very uncomfortable, feeling the tube deep in her chest and badly wanting it out. There was a commotion around her and they 'did a suction':

*Suctioning is a very uncomfortable experience. You don't want to cough because it hurts and it takes all your willpower not to grab the tube every time they suction you.*

She heard someone say that she had dislodged her tube and then cannot remember anything more as she again drifted out of consciousness.

Anne recollected a number of times in which she would wake suddenly: pain, coughing, suction, difficulty breathing, helplessness. Each time, she was not able to drift easily back into sleep:

*It takes you ages to settle down afterwards. Problems with breathing are particularly frightening.*

### **Essential interpretation**

In this phase, Anne was 'rudely awakened' on a number of occasions. To sleep is natural and a great healing force in our lives. We let go into the unknown, whether dreams or absence. In sleep there is a kind of implicit bodily trust which we often are able to take for granted, a form of unconsciousness that is productive and not life-threatening. Being awakened by not being able to breathe is shocking, frightening and unsettling. The body is on alert to initiate any possible behaviour that could eradicate breathing obstructions or other threats to wellbeing. Knowing that the obstruction (in this case the tube) is actually a beneficial device is not helpful. Apart from the desperate physical sensations, difficulty in breathing undermines the normal sense of trust that the body can look after itself without self-conscious vigilance. Each time such difficulties occur, it erodes the sense of confidence that it is 'OK' to sleep. So, during this phase of her experience, although sleep was needed, Anne's body was increasingly *on guard* to act – on a primitive and basic level – even if this meant fighting those who were helping.

### **I did not know what to do with myself**

*I found being turned very – I did find that was painful rather than uncomfortable. I found that my whole – my hips were very, seemed they were very sore and painful – and being turned from side to side – and I found that when I was on my side for a while that side of me would just begin to hurt – and it's not that it becomes uncomfortable – it really does HURT. And the other*



*thing I found that hurt at the time, were my ears, depending which side I was on. And I still suffer from that now. If I've been laid in bed, you know, I wake up most mornings with painful ears.*

Procedures were often uncomfortable but sometimes more than this: they were painful. Anne was not able to move herself very much. Other problems developed which increased her discomfort and pain. She had developed diarrhoea and stomach cramps. This became so bad that they were having to 'pour' fluid into her 'to replace potassium'. In addition, her sheets were needing to be constantly changed:

*I was having the sheets constantly changed ... half of me wanted just to lie [on soiled sheets] ... now when I think about it, it sounds disgusting, but I just wanted, in a way, to lie in it because I couldn't, I didn't, want to be moved again, and washed again, because I was just so sore. And I can remember they asked me ... they wanted to put a rectal tube in because they [were] worried, they said, about the amount. They said it was just like water and they wanted to know how much I was like, losing. So, I can remember agreeing to this ... I thought to myself, well, this will be better. I won't have to be moved every two minutes. I'll be able to perhaps get [to sleep] – because I remember just feeling so tired. I just wanted to go to sleep. I thought I might be able to go to sleep then. But that was the most painful thing I've ever had I think. The rectal tube was horrendous.*

This experience caused Anne much inner conflict. It also produced a difficult and embarrassing interpersonal situation. She remembers thinking that nurses must hate her and recalled how, as a nurse herself, she would have negative feelings towards patients who had diarrhoea all the time. She tried to put off indicating to the nurses as long as possible when she had diarrhoea. On the other hand, she wanted to be clean and comfortable. It was 'horrible' and has since made her more tolerant of her own patients. Anne agreed to a rectal tube being put in because she was losing so much fluid and also because she did not want to be moved so often. The rectal tube was, however, very painful and had to be taken out after four hours and her previous dilemmas returned: pain, discomfort, embarrassment, conflict: 'I did not know what to do with myself.'

In retrospect, Anne felt that she could have been better sedated during this first admission to ICU. It was subsequently sufficiently important to her that she let her husband know her wishes about sedation, so that he could act as her advocate.

*... the second time [I was admitted to ICU] when I was on morphine and midazolam it was definitely much better ... my chest was bad, and everything, the weaning went on for a lot longer. I couldn't just be extubated ... it was so hard just to tolerate being on the ventilator and being tubed and being awake ... people to be communicating with me ... they were actually very*

*good at this I think. I think I've got a very good family and because I've expressed my wishes [about sedation] to [my husband] ... he was very much my advocate ...*

She wanted to be asleep before the family left at night. It was important to her that one or more of them would hold her hand and say 'goodnight' and 'see you in the morning'.

*... before they went, whoever was the last person with me that evening [they ensured that] I was re-sedated ... so I'd hold their hand, they'd say goodnight, see you in the morning, or whatever, and I'd go to sleep and then be woken up the next morning. And I was able to cope much better ... I usually found by the end of the day I was reaching that sort of – you know – when you see patients who get angry and get confused and start pulling at their tubes and whatever – you know – especially I think on late shift, and in the evening ... as the end of the day goes on you realise you're not going to have the tube out ...*

It was also during this period that Anne started to see the physiotherapist. This was also a painful and uncomfortable experience.

*You've probably seen the physiotherapist, you know, at least twice that day, and I hated, hated that. [It was] oh so painful, physio is painful, uncomfortable, and you always feel worse when they've gone ...*

The physiotherapist's task was to encourage activity which breathing could not yet support. She would feel worse after the physiotherapist had gone. Such procedures also caused Anne to cough and her sputum would need to be extracted with a 'sucker'. She did not feel she had the energy to cough it out. However, if it was not attended to she would feel ill. Sometimes she felt more in control of this process and sometimes not. After she was extubated:

*I find that the whole coughing thing, coughing up sputum and stuff, all disgusting. And I can remember I always had to have my yankeur sucker, in my hand and I used to get really worried ... I used to get really distressed if I didn't have a sucker within reach – you'd get the nurse who'd tidy it away – 'cause it was when I was coughing and I had all that sputum and I couldn't, it's like you've not got the energy to spit it out, but it just made me feel so sick, that I had to get it out of the back of my throat straight away.*

### **Essential reflection**

During this period it was 'one thing after another'. This is a kind of bodily vulnerability in which one is forced to be dependent on others. It is at times extremely undignified. Different patients respond to this in different ways: guilt, resentment, depersonalisation. There also appears to be a sense in which the body is restless and in protest, as if to say that it has had enough. But there is no meaningful comfort during these waking hours. Time appears to



stretch out as a process of endurance from one uncomfortable moment to the next. It is thus no coincidence that, in telling her story, Anne spoke at this stage about sedation and her need for more. During this time of bodily vulnerability, family, ritual, routine and rhythm appear to become very important. When dependent, one feels most in need of those one loves and trusts. When time becomes an endless sense of endurance, routine can help one measure the succession of time as being in itself a small but significant achievement. The rhythm of such things is a faint but important reminder of deep and primitive connections that make sense in an organic kind of way.

**'All I was saying was ...': the frustration of not being understood**

*... I can remember getting cross with everybody, getting cross with, you know, my husband, my sister, my mum and dad because they couldn't understand what I was trying to say to them ... I can remember this one time, all I was saying was, 'I want somebody to hold my hand.' That was all I wanted. And they were getting pointer boards out and saying all sorts of things like ... do you want have a wash, do you want to suck, you know, an ice cube and all these like bizarre [questions] – and all I wanted was – and I can remember getting so cross with everybody in the room – and I can remember like in my head, I went like – just fuck off – leave me alone – all I want is you to hold my hand!*

During her time of being on a ventilator Anne experienced a number of frustrating encounters with people around her. This represents another dimension of the experience of having a tube down her throat: Anne could not communicate properly. Feeling weak meant that she did not want to have to make an effort to communicate. She wanted to be understood with as few gestures or words as possible. She was impatient and frustrated when people did not know instantly what she meant. Anne had most success communicating with her family. They, especially her husband, understood her gestures. She reflected that her husband's participation was very important to her. He stayed there at important times. He would even clear up the diarrhoea, change the sheet and wash her. It was also important to her that he acted as her advocate and often asked questions about what was going on. This felt reassuring for her as it lessened the sense of having to communicate on her own behalf. At times she resented when he was not there, especially when things were being done to her. He developed little rituals of things he would do for her before he would leave. This would help her to settle down.

**Essential interpretation**

Being 'cut off' from being able to communicate easily occurred at just that time when Anne was most dependent on others understanding her. Such a dilemma has a resonance of infancy where, for example, the distress of feeling cold may be mistakenly interpreted as a call for food. In the present context the inability of others to read Anne's gestures constituted an unwelcome interference

which made matters worse. Not only did she have a need (wanting her hand to be held) but now she also had an interpersonal situation that was felt as intrusive. It is ironic that, in this instance, Anne wanted yet could not get, something so simple; it highlights a very human reaction: that when someone is in distress and cannot communicate their needs, we tend to look for the more technical reasons for the distress (cold, pain) rather than the more subtle human needs such as intimacy or reassurance. Her husband did not just know *how* she was but also *who* she was and this appeared to be crucial in the way he communicated and the rituals he offered in providing her with a sense of familiarity and continuity.

**'I was probably a really difficult patient': ambivalent feelings during the weaning process**

*I was quite involved in my weaning ... I can remember – I was on a Servo 300 – you know, wanting it turned round, so I could see my own tidal volumes, and things like that ... because the thing is ... I felt I was breathing. So I would be like, you know, you can take this tube out now 'cause I'm breathing ... then they would have to tell me, 'You're not, look this is what you're doing.'*

*With patients, they're getting told all the time, 'Oh you're doing really well, you're breathing into the ventilator ... if you carry on like this we'll take the tube out, ... that doesn't really mean anything to you, 'cause you feel like you're breathing. So I couldn't understand why, I still had this tube down. It was as if they were ... rationally you know they're not, but you do think they're just doing it on purpose. They can take it out now. I just want to be quiet.*

*... this is where I think patients should be more involved and in control.*

Anne was quite involved with her process of being weaned from the ventilator. As she started to feel better, she felt a need to become more active in the ways she expressed herself. As the day wore on, she would become more irritable with everyone. The tube was an ordeal and she could not sleep. She was also acutely aware of how her bodily functions were marginal and how small, normally natural, functions could become crises. For example, she would feel she wanted to 'do a little cough' but would start coughing 'big time' and someone would have to come in and use the suction. At times she would fight her desire to cough as she did not want to create a fuss and wished to avoid the suction. She wanted the ventilator to be turned around so that she could see her own tidal volumes. This was important, as she noticed that she could not always trust her own internal feelings about how she was. For example, she would sometimes feel that she was breathing and that she could breathe on her own, but the monitors indicated otherwise.

*... there were times when you feel like a bit paranoid. Like they don't like you ... I also had the feeling quite often that [they thought] there was nothing really wrong with me ... and that they thought I was a hypochondriac ... you're not in hospital unless you're*



*ill, but I had this feeling that people were talking about me – and this paranoia – and there were certain nurses and things I didn't like, and it wasn't that they'd particularly done anything, but it would be because I thought they were laughing at me.*

Anne experienced a number of fears and worries during the process of weaning. At times she became preoccupied with how she was being regarded by nurses and doctors. She felt isolated when she was in a side room and felt very alone when nobody was there. She worried about how they would know if they were needed. She became particularly sensitive to one nurse's demeanour. She interpreted this nurse's gestures and expressions to mean that the nurse was 'always angry' with her. It became somewhat confusing about who was angry with whom as the nurse said: 'You really hate me, don't you.' She experienced this nurse as scolding in the way that she would give instructions such as, 'Leave your tube alone.'

*... this older nurse, who always seemed like she was cross with me ... and I can remember she actually said to me ... she came to do some suction or something like that, and I must have like looked at her, and she said, 'You really hate me don't you'. I can remember her saying it to me. Well, I was still tubed, so I didn't say anything*

*... she always got cross with me ... well, she may not have been quite as short and cross with me as I remember, but that's how I remember her. Yeah, I can vividly remember, I mean, I'd recognise her again.*

Anne thinks that she was probably a difficult patient but now, as a nurse, she values patients and relatives who ask questions.

*I don't think there's a nurse out there who can say that they've never been short with a patient. And looking back, I think, at times I was probably a really difficult patient, and probably my husband was quite a difficult relative.*

On the day she was extubated, Anne felt euphoric with the thought that she was getting better. She would be able to go back to the general ward and imagined herself getting up to sit on a commode. Her future first returned in these very basic ways even though she could not physically get out of bed.

### **Essential interpretation**

Adapting to breathing again on her own marked a transition from the 'twilight world' where she drifted between life and death, between technological and human support, between caring and not caring, between fight and flight. Anne's hand was now not just looking for human contact and reassurance, but it was beginning to become again what it used to be: an instrument of power towards personal competence and self-support.

Issues in the social world again became relevant and particularly focused on the beginnings of power struggles between her and others. Though she was still unpractised

in negotiating interpersonal power, and even confused and ambivalent about this, she recognised that her growing self-assertion was a good thing. In 'being weaned' one re-enters again the world where saying 'yes' and 'no' is granted more meaning. Clarifying the ambiguity of where dependence is still needed and where a degree of independence is possible, is both a personal and interpersonal task. Both patient and caregiver need to recognise and adjust to this transition. Its inconvenience and ambiguity needs to be welcomed. It is a welcome (back) to life, like the protest and cry of a baby first gasping for breath. As such, protest is the beginning of choice and personal competence.

### **SOME REFLECTIONS BY ANNE IN RETROSPECT**

#### **'I was somewhere where people die and I could have died'**

Anne returned to intensive care on two further occasions. She became more toxic than before and had periods of hallucination and a second intubation that was even more taxing than her first. However, we leave Anne here with some of her reflections on her experiences.

#### **The importance of having an advocate**

In retrospect, Anne felt that her husband's strong advocacy on her behalf was extremely important to her. Although she had some understanding of what was going on, she knew that she was not able to advocate meaningfully on her own behalf. Her husband took this on in a very direct and assertive way:

*I mean the consultant was obviously scared of my husband, he could intimidate him*

*... when I was back on the ward and was getting worse – before I was re-admitted – he actually went off and found him, within the hospital, and said I think you should come and see my wife.*

This was particularly significant as she knew some of the doctors and nurses personally, which complicated matters. At various points they would also act as an advocate on her behalf and this could become confusing. Out of this, she has developed the opinion that more attention should be given to the way that nurses could take on a clear advocacy role and the limits and boundaries of this.

#### **Sleep and sedation**

At a number of times through the interview, Anne spoke of the dilemma surrounding sleep and the difficult decisions about degree and level of sedation at various points. She reflected that she did not have any good sleep until she was discharged from hospital. In hospital she was tired all the time and was frequently awoken by things happening both from inside her as well as from her immediate external environment. At times, she developed an ambivalence toward sleep. On the one hand, she would sometimes fight to stay awake as she wanted to know what was going on and was afraid to relinquish control. Also, she had frequent nightmares and wished to



avoid these. On the other hand, she badly needed the sleep and the potential comfort, renewal and healing that could come from this.

### Fear and thoughts of death

In retrospect, Anne highlighted the importance of simple human reassurance as a way to help her manage her fear. Non-technical touch was especially valued. Anne reflected that she was much calmer and able to cope when someone was holding her hand. She could put up with more pain than when this did not occur. It had a very different effect to the kind of contact when people were *doing things to her* within a more technical context. She particularly emphasised the importance of family being there and the sense of continuity and understanding that they provided. At one point, a little girl next to her died. This brought home to her the feeling that she could die. She remembers the staff helping the mother to leave the unit and she could not sleep after this. It set her thinking about the meaning of what was happening to her and her family, and it was important to her that the nurse told her about what had been happening as she could then make some sense of the distressing sounds around her at this time.

*I woke up all of a sudden, to hear somebody screaming ... it was the mum ... I knew there'd been a little girl in the bed next to me because I could see her Garfield quilt cover but I couldn't see her head or anything because of the ventilator and whatever, and I woke up and the curtains were drawn between our two beds ... it was a blood-curdling type screaming ... but luckily my nurse was there ... if she hadn't have been right there it would have been even worse, but she was like immediately by my side ... and I can remember she touched me, held my hand and said not to worry, that just that the little girl next door had just died and then I can remember, I wished they'd pulled the curtains right round me because at that point I thought, ooh ... and it wasn't so much that I thought oh gosh that's awful that little girl's died ... I suddenly thought I could die, I'm somewhere where people die and I could die.*

### Essential interpretation

In retrospect, Anne focused on three themes that exemplified an inevitable ambivalence about loss of control and dependence on others. These reflections occurred during the course of the interview and were included as a useful retrospective commentary on some of the implications of her experience. She realised that she had been in a place where she could have died. To relax vigilance and let go into the care of others is far from easy when one's very life is at stake. Yet, if ever trust was needed, it was then.

Within this context, the advocacy on her behalf by her husband and the simple non-technical touch by her caregivers assisted her in the crucial struggle to accept a degree of loss of control and the necessary trust in her caregivers. This was an ongoing task for Anne at various levels at various times and was not irrevocably achieved. An understanding of such impossibility by all caregivers

would constitute the kind of compassion which adds an honest human dimension to a situation where, for a while, the technical dimensions are primary.

### DISCUSSION AND CONCLUSION

In the past much of the research investigating patient experiences and reactions to ICU, has been of a quantitative nature (Asbury, 1985; Chew, 1986; Jones *et al.*, 1979). As a result the findings have represented the concerns of 'the average person'. This approach, however, does not reflect the individual's perspective of what it is like to be 'on the receiving end'. By contrast, the use of hermeneutic phenomenology, as illustrated in the case of Anne, can be valuable in unveiling the nature and complexity of struggles that an individual undertakes whilst in the ICU. Arguably, research methods such as this make a unique contribution to the development of nursing practice, because they allow nurses to imagine what it is like to be a patient. Additionally, through this process, it is possible, with guidance, to explore a number of aspects relating to critical care nursing and professional practice, which ultimately will assist nurses to develop a more sensitive and ethical approach.

In terms of analysing Anne's experience in the ICU, the intention here is to draw out specific issues of care and review these with reference to the literature. Anne, it seems, encountered many personal struggles, including the threat of losing both her identity and dignity. In addition, not being in control or able to voice her needs and concerns were other factors which compounded her distressed state. Yet quality nurse-patient interaction and good psychological support was not very much in evidence. It may be reasonable to assume that since Anne was sedated and moving in and out of a 'twilight world' her recollection of events may be distorted. However, Asbury (1985) found that 75% of patients had memories of their ICU stay, whereas a more recent study (Green, 1996), reported that 92% of patients were able to recall their time in the intensive care unit. Other research has indicated that ICU patients have been able to recollect many different aspects of their care and of their carers including being able to describe specific characteristics of their nurse (Butler, 1995; Green, 1996; Russell, 1999). Arguably Anne's experience may have been different.

The related literature has identified a number of positive ways in which nurses can support patients during their critical illness and whilst receiving artificial ventilation. The importance of nurses maintaining communication with patients in the ICU setting has been well recognised as a vital component of the quality of care in this environment (Ashworth, 1980; Albarran, 1991; Dyer, 1995). This is supported by the personal reports of patients who have described interactions with nurses as reassuring, comforting and vital in affirming their identity (Green, 1996; Hafsteindóttir, 1996; Holland *et al.*, 1997; Hupcey and Zimmerman, 2000; Smith, 1987). Despite this, a number of studies both in the UK and abroad indicate that standards in this area of nursing practice remain poor (Baker and Melby, 1996; Bergbom-Engberg



and Haljamae, 1993; Russell, 1999; Turnock, 1991). Consequently, many patients like Anne experience feelings of isolation, anxiety, fear, paranoia and depersonalisation. Moreover, not knowing what is happening to them can exacerbate a sense of insecurity and add to the levels of worry and disorientation (Hupcey and Zimmerman, 2000).

One of the factors governing the amount and quality of nurse interaction with patients is their level of responsiveness (Ashworth, 1980; Baker and Melby, 1996; Bergbom-Engberg and Haljamae, 1993). Since Anne was sedated and therefore unresponsive for periods of time, the amount of verbal exchange may have been minimal and only of a procedural nature. Clearly this mind-set has implications for the quality of communication patients experience when unconscious. Therefore unless ICU nurses make a concerted effort to make their presence known, regardless of an individual's level of consciousness, their contribution to the patient's welfare will remain invisible. Furthermore it is likely that when the patient wakes, they may feel insecure, afraid and confused, and become paranoid. However, many of these emotional problems could be averted if patients are given regular information and explanations about their progress and about planned procedures or treatments (Parker *et al.*, 1984; Hupcey and Zimmerman, 2000). Additionally a number of approaches have been suggested to be helpful, including: structuring day and night activities; ensuring continuity of staff; promoting involvement of the family in care; siting large clocks where they are visible to patients; and encouraging the placing of items such as photographs of the patient and their family by the bedside (Albarran, 1991; Dyer, 1995).

The use of therapeutic touch has also been investigated and its use is recommended by a number of researchers (Estabrooks, 1989; Pearce, 1994; Verity, 1996) as a strategy towards providing sensory stimulation, for reassuring patients and reconnecting them with humanity. Smith (1987), like Anne also a nurse, was managed in ICU for an attack of asthma and reported that she found 'hand squeezing or holding hands' helpful and comforting. Similar patient experiences are described in other studies (Holland *et al.*, 1997; Russell, 1999). Linked with use of caring touch is the role of presence. Scholes (1996) suggests that nurses can manifest caring concern by the use of therapeutic presence. The use of 'self' as a therapeutic tool, in combination with the use of touch, can assist nurses to convey attentiveness and responsiveness to their patients, which in turn can bring about a peaceful and relaxed state in those under their supervision. Whilst the experiences of those nursed in ICU indicate that touch is valuable in conveying a number of positive messages, a failure to spend time interacting with patients may be interpreted as an unprofessional and uncaring attitude (Holland *et al.*, 1997).

Fundamentally, in order to meet the needs of a patient, ICU nurses must be committed to building a close therapeutic relationship and level of communication with them in order to help maintain their patient's identity, gain their trust, assure their collaboration with their care and contribute to their emotional stability (Albarran,

1991; Holland *et al.*, 1997). Jenny and Logan (1994) endorse this and suggest that getting to 'know the patient' is a vital process of caring. They argue that, as a result of doing so, nurses are better able to recognise discreet and subtle nuances or changes in their patients' condition and implement appropriate supportive measures. For example, this might relate to judging the readiness and preparedness of an individual to commence weaning from the ventilator. This would have been of benefit in Anne's situation. However it is recognised that nurses can be distracted by technology and other aspects of the environment and so fail to take account of an individual's emotional needs (Butler, 1995; Cooper, 1993; Turnock, 1991). This inevitably has serious consequences for the quality of nurse-patient interaction and may potentially lead to the 'dehumanising' of a person. Overall it seems that there are many vital reasons for maintaining a high level of communication with the patient as, without this, the implications for the critically ill are not only emotionally devastating but can affect them long after they are discharged home (Daffurn *et al.*, 1994; Jones *et al.*, 1994; Sawdon *et al.*, 1995).

In conclusion, it seems unquestionable that intensive care nurses are ideally placed to support the patient by humanising the environment, preserving the individual's self-esteem, understanding their ambivalent struggles with trust and control, and reducing their sense of social isolation and depersonalisation. 'Empathic imagination' thus becomes an important resource and capability in such a quest and may be supported by other similar studies which learn from the patient about what it is like to be 'on the receiving end'.

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## Guest editorial: What in the world are we doing?

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When I was in Canberra for last year's intensive care conference – which, by the way, was very enjoyable and very professionally orchestrated – I was asked by one of the editors to write a guest editorial. So, given that an editorial offers one the somewhat rare facility for free speech (others might say opinionated rambling!), I gave some consideration as to what I could talk about that might be of interest to you all 'down under'.

Having been in Australia twice – and I'm already planning the next trip for the World Congress in Sydney – I have been struck by two things (neither of which, fortunately, was lightning). The first is the friendly welcome that Aussies seem to extend wherever you go and the second, which is closer to the theme of this editorial (which I am building up to), is the enthusiasm that you all seem to have for your work. So, what better place could there be than Australia to initiate a world association for critical care nurses?

Some of you (the enlightened few?) may be aware of work that has been going on 'behind the scenes', motivated by one of your own true blues, Ged Williams. Since completing a world survey of critical care nursing associations, Ged and colleagues from Asia, America and Europe have been working hard to realise the potential for a worldwide collaboration of critical care nurses – I want to emphasise nurses because there is already World Federation, but not one that has nursing issues at its heart. Amongst other things, the survey gauged the interest for forming a world association of nurses and there was overwhelming support for this.

So, where do I fit in? What have I got to offer the discussion? Well, what I really have is a question: what would be the value of a world association of critical care nurses? I think this is a really important question that we need to have some very good answers to before we go ahead. Whether or not we can form an

association is not the issue; I am confident that we can. The real issue is why.

I have been associated with the European Federation of Critical Care Nursing Associations (EfCCNa) since its inaugural meeting in Rotterdam, Holland back in 1997. We have around 22 member organisations in 20 countries, representing some 20,000 critical care nurses. The Council of Representatives meets every 6 months in a different European country (sounds like a good life doesn't it?) to conduct its business. Founded on the principles of equity and collaboration, its slogan is working together – achieving more. Some of our experiences in Europe may be helpful in forming an opinion as to the value of a world association.

It occurred to me recently that the themes of the Global Connections critical care nursing conference, hosted by the British Association of Critical Care Nurses in Edinburgh last year, offer us four keys (or four Cs) to ensure success; communication, collaboration, creativity and caring.

### Communication

One of the things that we have learned in Europe is that to truly work together requires time and patience. Not least of all is the problem of needing to communicate in one language. Although we utilise English as our common language, we estimate that to be able to talk to the majority of nurses in Europe, ideally we need to add French, German, Greek, Italian and Spanish to our list. This has obvious implications for our first conference (which you are all invited to – Disneyland, Paris, May 2002).

We have been working together for a few years now and the barriers to communication are far less than at the outset. We know each other now and, more importantly, we know about the different issues that we face in each of our countries. But this takes time and it is only now, after over 3 years, that we are really beginning to communicate well with each other (it definitely helps that we all have e-mail). However, let's not just focus on the problems. Let's see them as challenges, the means to achieving an end. A world association could provide many 'ends', offering lots of opportunities for identifying, communicating and working with colleagues from around the world.

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### Collaboration

Collaboration requires good communication. Developing an effective network is really essential and one of the EfCCNa core administrators takes responsibility for maintaining an up to date list of contacts. So, now that the Federation is communicating well, we are beginning to see the EfCCNa tree bearing the fruits of collaboration. We have developed a sub-group structure, with smaller teams working in five main project areas. This has proven to be quite successful and also ensures that the work of the Federation is spread equally among its members.

This is only a small example of creative working but there are many others. However, as I mentioned above, there are lots of different issues in Europe and many different cultures, policies and laws that affect the issues. For example, although it might be possible to set European standards of practice, it would be impossible to enforce them. Nevertheless, it is still early days and to achieve change you have to make a start somewhere, no matter how small it seems at the time. A world association offers the potential to create some excellent opportunities for collaborative projects to improve nursing practice. For example, the sharing of expertise through education and practice development programmes.

What about finances? It does cost a lot of money to manage the European Federation and currently most of the funding, particularly for representatives to attend meetings, comes from the member associations themselves. Also, it takes more time than you at first realise to establish a viable professional organisation that potential sponsors see worth in. In the meantime, it has to be an 'all hands to the pump' approach. This raises the issue of equity. Some member

associations are small, others are large. Some are financially well off, others are not. Who pays what and how much? Do the big guys help the little guys or is everything equally weighted? If you vote for something, does every member have one vote or is it by proportional representation?

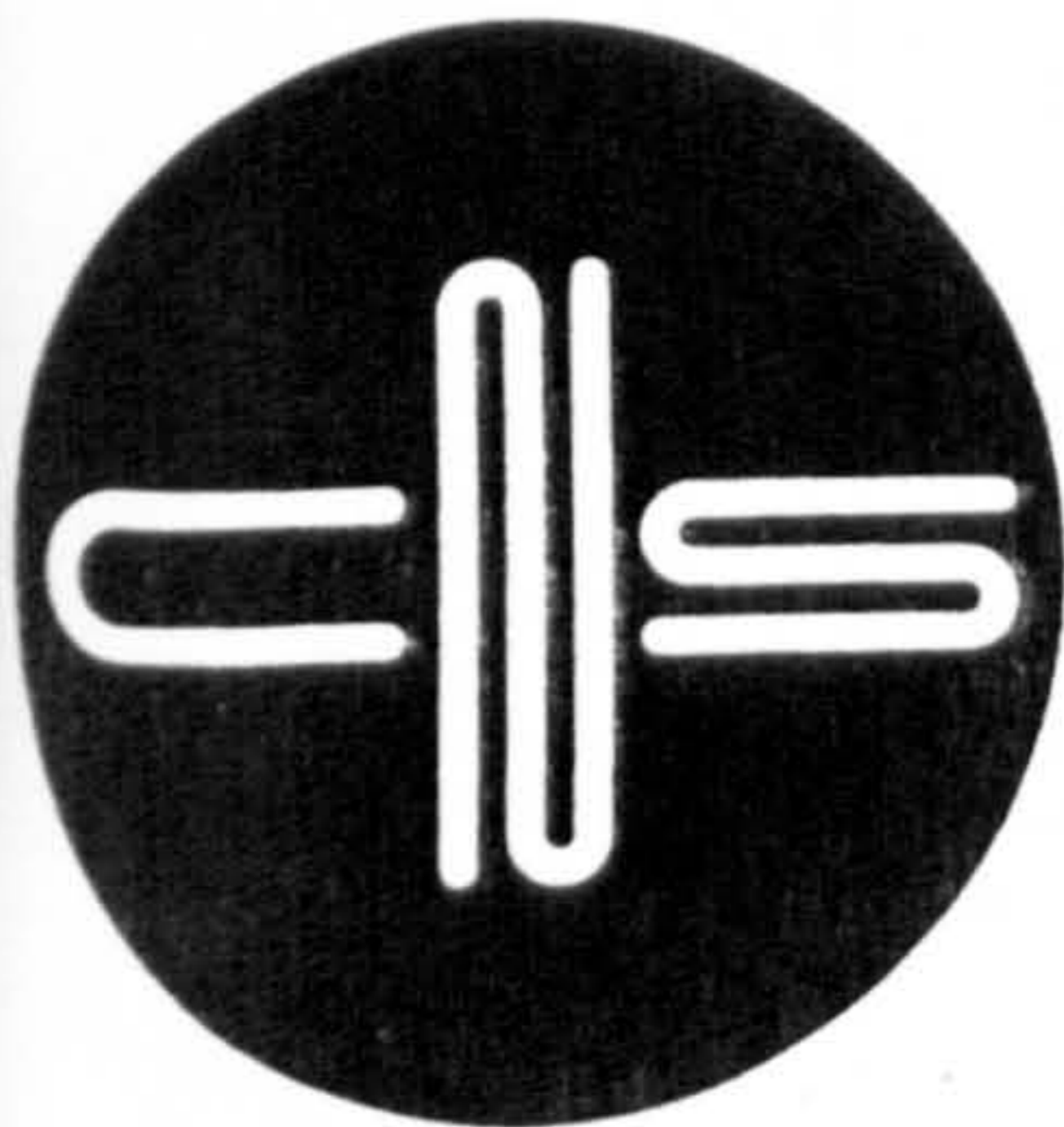
### Creativity

These and many similar issues need to be thoroughly debated before being laid to rest within a constitution. It took the Federation 2 years of work before all of the issues were satisfactorily resolved and some of them required some quite creative solutions. For example, the Federation has no presidential figure since it was felt that this was in contradiction to its equity principle. Instead, we have a different chair every 6 months who is also responsible for hosting the Council meeting. Without doubt, a world association would need to facilitate creative new ways of dealing with old problems in critical care.

### Caring

The final 'C' is caring. Isn't this why we do all of this? It's the bottom line. We do this because we believe that it makes a difference. We can and, perhaps more importantly, should, promote best practice across the globe; caring for our patients and caring for each other. The end product of everything we do should be measured in its ability to make a difference to patients' lives. This is what I believe must be the driving value for a world association. We can do some great things together but if we can't see this as the outcome, then let's just forget it!

For more information about EfCCNa, check out the website: <<http://www.efccna.org>>.



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## Revisiting qualitative inquiry: Interviewing in nursing and midwifery research

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Qualitative research is now often favoured in nursing and midwifery because it emphasises a person-centred and holistic approach. In this paper it is proposed that this type of inquiry is not only a valid way of carrying out research but also a very useful means of eliciting the perspectives of patients and colleagues. It is acknowledged that qualitative approaches are not unproblematic. In particular, there are issues of validity and reliability which should be addressed by researchers, hence a discussion of these is included. Interviewing is the most common method of collecting data within this approach and is examined here, together with its advantages, common pitfalls and problems.

### INTRODUCTION

The traditional view of science is so entrenched in modern society that the term 'knowledge' is usually seen as being synonymous with scientific fact (Manley, 1992) and any knowledge which has been acquired using techniques used by scientists is acknowledged as having been acquired in the best possible way (Chinn and Kramer, 1991). Indeed, scientific knowledge is regarded as fact of the highest order, and is presented in the form of principles, laws and theories 'which must be true' (Silva, 1977). This view of the world does not allow for subjective experience and seeks merely to identify empirical knowledge. That which is perceived through the senses is measurable and can be used to describe, explain, predict and control the world in which we live. This view is often called the scientific paradigm (Watson, 1981) The use of the term paradigm, however, could be debated. It is also an oversimplification to distinguish between the qualitative and quantitative paradigm (Atkinson, 1995).

### QUANTITATIVE RESEARCH

The method of obtaining knowledge within traditional 'scientific' and positivist approaches is characterised by reductionism and quantifiability (Watson, 1981) and linked to the natural and physical sciences. This rationalistic methodology is appropriate for research within the medical model but is often unsuitable for research in nursing and midwifery, as it does not focus on personal perception, personal experience and personal knowledge. Inherent in this perspective is the assumption that knowledge is objective, factual and, to a degree, acontextual as opposed to being interpretative, socially constructed and context-dependent. When quantitative approaches are used there is a danger that researchers miss the rich data which assist in understanding the way people interpret and give meaning to what happens to them, and which enables them to justify their actions. Social scientists argue that qualitative research that adopts the person-centred approach meets the criteria of science (Giorgi, 1997) when it is rigorous and systematic as well as open to peer examination and public scrutiny. Some, such as Clarke (1995) for instance, maintain that the investigation of the social world cannot be truly scientific. Nevertheless, systematic procedures, theorising and a critical stance — elements of science — are involved in all rigorous research — 'A "properly done" study possesses rigor' (Emden and Sandelowski, 1999).

Nursing and midwifery have made a great deal of progress in advancing a theory that each discipline is an art as well as a science. However, even recently, health professionals used to believe that the feelings and perceptions of

#### KEY WORDS

Qualitative research,  
Interviewing, Validity  
and reliability,  
Trustworthiness and  
authenticity



patients, clients and colleagues were less important than hard facts gained through controlled trials and laboratory work. The bio-medical model still prevails in much healthcare research and randomised controlled trials are seen as the gold standard by many healthcare professionals, in particular because the findings of this type of research are more readily generalisable.

Corner (1991) asserts that nurse researchers used to base their research on quantitative methods because they were attempting to gain acceptance from other healthcare professionals, especially doctors. The positivist approach has been criticised by social scientists and researchers in nursing and midwifery, although it must be stated that much of the criticism of positivism is based on a simplistic view of the scientific paradigm (Hammersley, 1992).

Much research in healthcare focuses on the medical model of treatment, and its effectiveness, which is measurable. However, nurses and midwives are now coming to believe that the voice of clients is not sufficiently heard, such that their experience is undervalued and that a change in research methodology might therefore be appropriate, because examining perceptions of care and treatment is not easily measurable. These views originated among social scientists, but healthcare professionals have now come to realise that both qualitative and quantitative research methods can be used in their disciplines.

#### **QUALITATIVE APPROACHES**

Experiences throughout a person's life as well as social and physical environment influence that individual's identity and his/her perspective of the world. (Hospers, 1990). In the context of healthcare, people will have experiences that have moulded their ideas, perceptions and assumptions about health and illness. It is therefore necessary to employ research methods that enable these perspectives to be recognised, and to assign value to personal experience and knowledge. It was the realisation of this concept that has been responsible for the shift towards interpretative and constructivist approaches to research. Integral to this shift in perspective is a growing awareness that nursing is both an art and a science (Peplau, 1988). The art of the discipline is related to the qualities of communication and interaction and is often, though not always, based on intuition, empathy and experience.

In the medical world, the dominant approach to research is rooted in the natural sciences (Johnson, 1968), although this is slowly changing (Crabtree and Miller, 1992; Mays and Pope, 1996; Murphy et al., 1998; Royal College of General Practitioners, 1999). However, in both nursing and midwifery, the qualitative perspective has gained ground. This model values the research participants' own perceptions, experiences and perspectives. Knowledge is therefore context-dependent and situation-related, and researchers need to be context-intelligent and sensitive to the social and personal environment of patients or colleagues. Nurse and midwife researchers now often use approaches originating from philosophy, sociology and anthropology rather than just from the natural sciences to identify and generate knowledge. This is reflected in the increased use of phenomenological, hermeneutic, and ethnographic methods (Vaughan, 1992) as well as grounded theory (Strauss and Corbin, 1997).

It is important to realise that there is more than one way of approaching a qualitative inquiry. Many of these approaches, however, are based on similar epistemological assumptions. Schwandt (1994) discusses the various branches within qualitative research and considers the risk of making a clear distinction between interpretativist and constructivist approaches, as they share a philosophical basis and common roots, including hermeneutics, symbolic interactionism and discursive psychology. The major methods of qualitative



researchers are based on these philosophies — for instance, interpretative phenomenology and grounded theory as well as other more descriptive methods. All these approaches have many features in common; for instance ‘all share an interest in humans as active agents and constructors of meaning’ (Schwandt, 1997).

These approaches are appropriate for studying areas where little is known or understood about a phenomenon. The data collected from the participants in the research process have primacy, researchers progress from specific to more general ideas and theories, hence qualitative research starts out being inductive. Many qualitative researchers, however, see this type of research as both inductive and deductive (for instance, Strauss and Corbin, 1998) as they develop ‘working propositions’ from early data analysis and follow up emerging theories through subsequent data collection and analysis.

Through a process of qualitative inquiry, of which multiple realities and context-dependence are part, and the use of research methods that focus on social knowledge as being interpretative and socially constructed, the essence of nursing and midwifery can be more fully understood.

#### **RESEARCH AS A ‘CRAFT SKILL’ IN NURSING AND MIDWIFERY**

Many nurses and midwives use both qualitative and quantitative methods in a single study. Leininger (1992) does not advocate this, claiming that different methods are based on different ideologies and philosophical approaches. Seale (1999) however, maintains that research decisions can be principled without being rule-bound and do not have to be based on particular philosophical perspectives. Research, he claims, does not have to be placed in paradigms, although these might be used as a resource.

If nurses and midwives were to regard research as a ‘craft skill’, they might start with simple problems in clinical practice rather than involving grand philosophical perspectives. They would then be able to use elements from a variety of philosophies. Indeed, Janesick (1994) speaks of ‘methodolatry’ — the idolatry of methodology — where the methodology becomes more important than the content of the research (although knowledge of underlying philosophies is always useful and usually necessary).

Qualitative methods, then, are often used for research exploring the perceptions of people and their interactions, attempting to ‘document the world from the point of view of the people studied’ (Hammersley, 1992). They have a place in nursing and midwifery, where patients’ and clients’ thoughts and ideas are valued; where health professionals are sensitive to their participants’ thoughts and feelings; and where the main purpose is to develop understanding of human experiences (Holloway and Wheeler, 1996).

#### **DATA COLLECTION IN QUALITATIVE RESEARCH**

The main methods used for collecting qualitative data are unstructured interviews, narratives, participant observation, and documentary research (for example, diaries, letters or historical documents). When working within these approaches, it is necessary to obtain rich and freely given data rather than responses directed along pre-determined channels. In order to remain congruent with the guiding epistemological stance, in which knowledge is interpretative or socially constructed rather than objective, it is necessary to use a research method free from prior assumptions. Nevertheless, researchers do have their own experiences, and knowledge and therefore cannot be completely objective (Strauss, 1987).

Since interviewing is the most common method of collecting data within qualitative research, it is examined in the remainder of this paper. Its advan-



tages, as well as common pitfalls and problems, are addressed. The purpose of interviewing is to hear 'the voice' of the participants, so as to enable understanding of phenomena from their perspective.

**THE INADEQUACY OF QUESTIONNAIRES FOR QUALITATIVE RESEARCH**

Questionnaires, even when open-ended questions are used, tend to direct the respondent, controlling, at least to some degree, the type of response given. Value-laden words and leading questions may produce bias (Burns and Grove, 1987). Additionally, questionnaires may restrict expression, either because space is limited, or because of the inarticulacy of the respondents. Furthermore, questionnaires do not allow immediate clarification of data or the exploration of areas that the researcher had not previously considered (Polit and Hungler, 1995).

When designing a questionnaire it is arguable whether or not it is necessary to review the literature that relates to the research topic. The problem with taking this approach is that the researcher is influenced or even directed by previous studies (Strauss and Corbin, 1998). Thus questions might be designed relating to 'known' facts, which may limit the potential for discovering new data and generating new knowledge.

When using questionnaires it is difficult to assign significance to particular areas, events or situations (Morse and Field, 1996). In an interview, however, the importance of an event can be gauged from the participants' spoken and body language as well as from gestures and facial expressions.

**INTERVIEWING**

By listening to the words of research participants, nurses and midwives gain an understanding of the way their patients (or their colleagues and other healthcare professionals) define and interpret the world, and why they act in the way they do. Interviews with patients illuminate those patients' perceptions of their care and condition. They provide not only access to feelings and thoughts, but also to private accounts of the situation that might contradict official reports given in formal situations. It must be recognised, however, that the thoughts and feelings of participants are not always based on facts or objective, but are merely their accounts of how they experience, interpret and construct their social world. Also, these interviews cannot truly present the participants' perceptions, as no person has direct access to others' experiences (Riessman, 1993), and there is never complete congruence between the participants' perspectives and their 're-presentation' by the researcher.

Although the researcher determines the topic for the interview, participants develop the framework within the boundaries of the research area and have a certain amount of control over the research process. Thus an interview might destroy some of the assumptions healthcare professionals have about their clients. Nurses and midwives may be surprised by the intensity of feeling revealed at an interview and may not always be prepared for the emotional experiences of patients which sometimes raises unexpected issues.

According to Seidman (1991):

*'...interviewing is most consistent with people's ability to make meaning through language. It affirms the importance of the individual without denigrating the possibility of community and collaboration.'*

Polit and Hungler (1995) consider that the advantages of the interview method far outweigh those of the questionnaire. Barriball and While (1994) justify the use of the interview method by stating that it has potential to over-



come the poor response rate of a questionnaire and is well suited to the exploration of attitudes, values, beliefs and motives, and gives the opportunity for observation of non-verbal indicators. These reasons are congruent with qualitative inquiry.

There are two types of interviewing in interpretative research: unstructured and focused (or semi-structured) interviews. Unstructured interviews are, according to Burgess (1984), 'conversations with a purpose', while Rubin and Rubin (1995) call them 'guided conversations'. For nurse and midwife researchers this is a very good way of exploring patient perspectives as it allows the participant maximum control. An illness history or the narrative of an experience — such as the perception of acute pain — can be elicited this way. The researchers can then follow up the ideas of the participants within the framework of the research topic.

A focused interview method enables the researcher to ensure participants keep on track, while still allowing freedom of expression so they [the participants] can explore issues that they feel are relevant to them. This allows more flexibility than a written questionnaire, which tends to generate factual rather than in-depth descriptive material. In fact, the diversity of the participants' personal experience and knowledge precludes the use of a rigid format. Focused interviews also help to ensure that the data are more closely tied and relevant to the research topic, while unstructured interviews require informants to articulate their responses freely from a personal perspective.

The use of questions in an interview helps focus the interview and reduces the 'dross rate', that is, information extraneous to the study (Lofland and Lofland, 1995) — although the material may well be interesting to the researcher and important for the participant. Interviewing in nursing and midwifery research is one of the most valuable ways of finding out what patients — or indeed, health professionals — really think, perceive or feel, information that is significant in the work of midwives and nurses. Seidman (1991), Rubin and Rubin (1995) and Kvale (1996) have more on the mechanics of interviewing.

#### THE USE OF THE 'SELF' IN INTERVIEWING

There is a considerable investment of 'self' in the interpretative approach (Smith, 1992): the social context of a research study requires personal judgement (Webb, 1992), which makes this type of research more subjective, for which it is often criticised.

Objectivity in research is seen as a sign of rigour. To be objective, researchers must not influence the research by their own value judgements. This is difficult to achieve in qualitative research because of the closeness of the participants and the researcher, and because the researcher is the main research tool. Quantitative research is seen as more objective because of standardisation, and because some of it takes place in laboratory conditions and is not context-dependent.

In the sense that qualitative researchers carry out research without distorting what they see and hear and are open to possible 'alternative explanations', they can be objective. But interviewers should be aware of their own mind set regarding the research topic, particularly when interview questions are being developed, because personal knowledge and experience inevitably shape them. It is important, also, that researchers are reflective and aware of their own assumptions and of their potential to make unwarranted assumptions throughout an interview (Holloway, 1997). They must therefore openly acknowledge their point of view.

Data collection and analysis cannot be fully independent of the inquirers'



values (Lincoln and Guba, 1985), their culture or group membership or, indeed, their experiences and personality. However, the subjective experience of the researcher can be a basis for knowledge about the phenomenon under study. This type of knowledge, which Reason and Heron (1995) call 'critical subjectivity', is rooted in critical consciousness. It is important to remember, though, that the data collected from participants must always have priority and be analysed without prejudice. This is one of the main reasons why researchers undertaking qualitative studies need to be self-aware. It is also important that researchers are open to 'alternative explanations' of the participants' words to those initially understood.

Self-disclosure is a useful technique for nurse researchers and also a genuine way of connecting with participants. It acknowledges similar experiences, which can be shared, and it promotes equality between researcher and researched. However, Hammersley and Atkinson (1995), warn about the occasional dangers of self-revelation, especially when the researcher's beliefs differ from those of the participants.

#### **SELECTION OF PARTICIPANTS**

Controlled trials and surveys usually require random sampling, but the interpretative approach allows the researcher to select participants on the basis of suitability and their experience with the phenomenon under study. This is called criterion-based or purposive sampling. For example, research participants might be the members of a particular culture (theatre nurses or community midwives, for instance), or have had an illness experience (for instance patients who have had surgery or those with a chronic condition).

Some experts believe that six to 10 participants suffice when the sample is homogeneous (individuals who are similar to each other in important aspects relating to the study), and more when disconfirming evidence is sought or researchers wish to achieve maximum variation sampling (Kuzel, 1992). Sampling units can also include settings, events or critical incidents. In some approaches, such as 'grounded theory', sample size is not determined before the study begins but is developmental; that is, researchers sample to saturation when no new ideas relating to the emerging theory can be uncovered (this is called theoretical sampling). Sample size in qualitative research is not as important as the inclusion of 'information-rich' cases. A more detailed discussion of participant selection can be found in Miles and Huberman (1994), Morse and Field (1996); and Holloway and Wheeler (1996).

#### **THE INTERVIEW PROCESS**

The exact interviewing procedures are not discussed here as they can be found elsewhere, for example Barriball and While (1994), Smith (1992). A pilot interview is always useful, although unnecessary in qualitative research because of its developmental nature. It may, however, help to identify areas that the researcher had previously failed to consider. It also serves as a testing ground for the interviewer.

To help informants feel in control of the interview and to respond without inhibition, the interview should be conducted in a comfortable, relaxed environment. This will help interviewees feel that they have the freedom to comment on issues to as great or little extent as they wish. A non-judgemental approach enables informants to make comments without challenge, although, of course, the researcher can seek further clarification. The approach of the interviewer is important, as the appropriateness of this will help in the gathering of rich data (Polit and Hungler, 1995).



**ESTABLISHING TRUST**

Establishing trust is a vital aspect of using the interview method (Koch, 1994). First of all, it should be made clear that participation in the research is voluntary, and that it is possible to withdraw from the interview at any time they wish. If the participants are patients they also need to be reassured that their treatment will not be affected through their participation in the research. If participants are to feel completely 'safe' and therefore able to divulge information freely, they need to be reassured that their identity will be protected and that the data will not be disclosed in any way that would cause them to be recognised. Thus, if they are colleagues, their place of work and their job title will need to be disguised, and pseudonyms should be used, not real names.

Additionally, participants should be told how the data will be used. Lengthy details are unnecessary, but an explanation of the purpose of the research should be given. (Too much detail may make participants feel that they must fit in with the researcher's ideas, which could make them less spontaneous in their responses.) The giving of non-judgemental responses by the interviewer is an important part of establishing trust and developing rapport (Morse and Field, 1996). Supposedly, nurses are 'experts in human interaction' (Kvale, 1996), and the qualities of listening and communicating are as necessary for nursing and midwifery research as they are for clinical practice. Once the interviews have been transcribed and checked by the informants, the tapes should be erased.

**DATA ANALYSIS**

Although the method of analysing interviews varies slightly between different qualitative approaches, there are many similarities, and the principle of analysis is the same. The first stage involves organising and ordering the collected material. After re-reading the interviews, researchers group ideas with similar traits and important words or phrases into categories. The categorisation process is repeated for each transcript, usually producing a large number of categories which are then arranged into smaller groups of similar meaning. The researchers then attempt to uncover relationships between categories and collapse or reduce them to themes. The themes may then be further arranged into domains.

The identification of important words and phrases is important. Recurring themes and patterns are noted as well as contrary occurrences — those categories that deviate from the patterns. In the research report, these themes will be linked to similar themes in the healthcare literature and, where appropriate, to other literature. When writing up, relevant sections from the interviews should be quoted to demonstrate that the themes derive directly from the data. In some approaches — such as grounded theory — collection and analysis of data interact, that is, data are analysed as soon as they have been collected. On the basis of this analysis, and on the emergence of theory and concepts, more data are collected.

Enlisting the help of appropriately qualified and knowledgeable peers in the analysis (peer debriefing) can reduce researcher bias. They might, for instance, re-analyse the data, after which the researchers compare this analysis with their own. When the analysis is complete it is worth sending the summary of the interview, with the researcher's interpretation, to the participant(s) for checking. However, this is disputed when taking a phenomenological approach, since only Colaizzi requires final validation by returning to participants (Beck, 1994). Even at this stage participants should be given the opportunity for modifications to be made. This enhances validity.



In qualitative research the individual is important, but it is also necessary to attempt to learn about typicality (or common phenomena) and about patterns of experience, otherwise nurses and midwives would not be able to use the research findings in their work.

### **THE ADVANTAGES OF INTERVIEWING**

The major strength of qualitative research is its high validity because it employs methods of data collection and data analysis that remain true to the participants' perspective. In the context of interviews, it is important to ask whether the method enabled the participants to describe and interpret the phenomenon under study.

The informal structure of interviews gives participants freedom to explore issues to whatever degree they feel necessary. Questions can be used as a 'springboard' for the development of ideas and the generation of rich data. An interview gives the interviewer the flexibility to phrase questions in any way that will elicit the meaning the phenomenon or experience has had for the participant. Reliability and validity depend upon the ability of the interviewer to convey the social reality and interpretation of the participants.

### **PROBLEMS WITH INTERVIEWING**

Nurses and midwives must be aware that the qualitative interview is sometimes over-used. Silverman (1998) states that 'there is an imbalance... in favour of the open-ended interview' and wishes this to be re-examined. He claims that the strength of the interview is that it allows for the exploration of practice and social interaction, and suggests that this research method should focus not only on people's perceptions but also on their actions and behaviour.

This means that observation is as important as interviewing. There is, of course, a problem with participant observation — lack of time — for interviewing does not take as long as observing in a setting. Atkinson and Silverman (1997) claim that interview findings are rarely treated as problematic, and that deviant cases and alternative perspectives are neglected in interviewing. This means that researchers only use those themes emerging from the data that are common to all interviews, rather than investigating contrary occurrences, which may be just as important.

Nevertheless, only through interviews can health professionals truly elicit the client perspective. Interviews may or may not be representative of the real feelings and perspectives of participants, but they still present important reflections on their experience or perceptions.

Another problem with interviewing concerns the construction of an analytic framework. This often lacks theoretical dimensions and sometimes results in 'mere description' which is thin and superficial rather than providing a conceptual analysis and 'thick description', a term used by Geertz (1993). Although description of the participants' themes and categories is useful, it should not be based wholly on common-sense concepts but generate new theories and modify existing theories in nursing, midwifery and the social science disciplines.

### **THE PROBLEMS OF QUALITATIVE RESEARCH**

All research must show that it has truth-value and is rigorous. Evaluation and appraisal of research focuses, in particular, on issues of validity and reliability. Many researchers maintain that these criteria for judging quality and rigour can be applied to all research (Maxwell, 1996; Silverman, 2000). Others regard alternative criteria such as trustworthiness and authenticity (Lincoln



and Guba, 1985; Guba and Lincoln, 1989) as being more appropriate. Yonge and Stewin (1988) even claim that validity and reliability are misnomers in qualitative approaches.

*Issues of validity and reliability*

There are different definitions of validity. Qualitative research is often more concerned with construction of meaning and the presentation of the participants' reality (Mishler, 1986; Morse and Field, 1996) than with traditional notions of validity and reliability.

One of the criticisms of qualitative research concerns generalisability (external validity), which means that the findings of a study are generalisable, and are representative for the population from which the sample is chosen. In quantitative research this is to some degree insured by random sampling. In qualitative research it is more difficult to establish. Strauss and Corbin (1998) suggest that, although the findings are not necessarily generalisable, researchers should seek the representativeness of concepts and the applicability of theory.

Morse (1994) calls this 'theory-based generalisation'. In valid qualitative studies, theory can be 're-contextualised' in a variety of settings and situations: generalisability lies in the applicability of theoretical ideas to other situations and settings (Morse and Field, 1996). For this, Guba and Lincoln (1989) use the term 'transferability'. In qualitative research it means that the findings or theoretical ideas emerging from one setting can be transferred to similar situations or participants. Thus is it important to present the findings and theories in context.

Dingwall (1992) adds another difficulty, noting that qualitative research is often carried out by researching a single case in isolation, which means that negative evidence — that which does not fit in with the main findings of the researcher — is not considered. This may make this type of research anecdotal or journalistic. Strauss and Corbin (1998) point to the importance of building on previous knowledge to illuminate the phenomenon under study from different angles to assist generalisability. Murphy et al. (1998) also stress the value of cumulative research to establish the generalisability of findings.

The qualitative researcher is, however, not always interested in the generalisability of findings, although Giorgi (1997) claims that generalisability is possible, in that the essential structure of the concrete, lived experience can be described within a discipline, and Silverman (2000) sees it as necessary. It is more likely that the research has specificity (it is related to a specific situation or phenomenon) and typicality (it applies to particular types of situations, setting and conditions).

In the context of research interviews, the credibility of findings is dependent upon how well the researcher is able to elicit and present social reality from the perspective of the participants; that is, the 'truth' as seen by them. It is important, therefore, that participants are given the opportunity to read the completed interview or a summary of the data to check whether it represents their social reality.

A coherent description of the phenomenon or situation under study should be consistent with the supporting evidence (Schofield, 1993). Triangulation, a process by which the same problem or phenomenon is investigated from different perspectives, would be another form of establishing truth value. The issue of triangulation between approaches remains problematic, although a variety of forms of triangulation could be used (Denzin, 1989; Holloway and Wheeler, 1996), including 'within-method' triangulation (Leininger 1992) to insure the trustworthiness of the research.



In all cases of qualitative inquiry, the importance of the audit or decision trail must be recognised (Sandelowski, 1986, 1993; Koch, 1994). This trail describes in detail the decision-making processes of the researcher as well as the context and setting, and enables readers of the research to judge its credibility, rigour and quality.

*Status of the researcher*

It has been suggested that nurses and midwives cannot be ethnographers in the healthcare setting by virtue of their training because they are unable to remain sufficiently detached and objective (Aamodt, 1982). As previously suggested, to be neutral and objective is a positivist view normally expected from rationalist research, and is not in line with qualitative inquiry, which recognises that both the context and setting exert an influence. Thus, when interviewing, researchers not only need to acknowledge the context, the setting and their own experience but must also avoid overtly influencing the conversation according to personal values.

The effect of the interviewer must be considered (LeCompte et al., 1993), because, potentially, the presence and personality of the interviewer could have an impact on how participants respond, and may have a considerable influence on how the conversation flows. Similarly, it is important that the interviewer maintains a non-judgemental position and avoids the urge to assign value to participants' responses. Interviewer responses, which could be both verbal and non-verbal, have the potential for either encouraging or discouraging the participants and, as such, affect the free flow of their thought and speech. Mishler (1986) sees the role of the interviewer as being an active participant, and feminist researchers stress the value of empathetic exchanges of ideas (Stanley and Wise, 1993).

It is impossible to account for or test for lies, omission or manipulation, without repeating the interview. Interview questions should be designed in such a way that responses require the participant to go over similar ground. Contradictions and discrepancies may be of interest to the researcher because they illuminate the feelings and thoughts of participants.

The status of the interviewer may have some impact on participants' responses, particularly if the interviewer is regarded as an 'expert'. Thus participants may respond 'in the right way' or say 'the right thing' because they want to be perceived in a favourable light — the 'halo' effect. As such, there is a possible tendency to misrepresent their true thoughts and perhaps avoid contentious issues, or understate negative feelings. This is why nurses and midwives often interview wearing their ordinary street clothes, so that the gap between them and their clients is not immediately apparent. Participants will need reassurance about not being judged. The prolonged involvement of the researcher in the setting may also be a safeguard against misrepresentation as participants will not be able to conceal their real feelings for a long time span.

In nursing and midwifery research the researcher may know all the participants, and this previous association may influence the content of the interview. This might contribute to the potential for a halo effect, described above, but, on the other hand, it might enhance the interview environment by promoting a more relaxed and friendly atmosphere.

Taking a purposive sample means bias could creep into the research because the researcher has chosen the participants. Perhaps, therefore, rather than approaching potential participants directly it might be better to advertise for them on a board, in a newspaper, or have somebody else suggest them. Researchers must be aware that they are the research instrument in all forms of qualitative research and, as such, may have a great deal of influence.



**CONCLUSION**

Different research questions demand different methods. Nurses and midwives are now carrying out more qualitative research to elicit the perspectives of their clients. It has been shown that interview approaches tend to be favoured within the qualitative perspective, but it is advisable to be aware of the dangers of interviewing and the problems inherent in establishing validity and reliability, or their equivalents, in this form of inquiry.

All nurses and midwives carrying out research should ensure that it is vigorous and robust. When interviewing, their questions must help the participant to respond in such a way that the researcher is able to gather data that will have validity for the research project.

**KEY POINTS**

- Qualitative research is often favoured in nursing and midwifery research
- Qualitative research emphasises a person-centred and holistic approach
- Interviewing is the most common method of collecting qualitative data
- Issues of validity and reliability should be addressed by researchers using the interview method.

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# Worldwide overview of critical care nursing organizations and their activities

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## Keywords

Activity, Associations, Critical Care, International, Partnerships

## Abstract

While critical care has been a specialty within nursing for almost 50 years, with many countries having professional organizations representing these nurses, it is only recently that the formation of an international society has been considered. A three-phased study was planned: the aim of the first phase was to identify critical care organizations worldwide; the aim of the second was to describe the characteristics of these organizations, including their issues and activities; and the aim of the third was to plan for an international society, if international support was evident. In the first phase, contacts in 44 countries were identified using a number of strategies. In the second phase, 24 (55%) countries responded to a survey about their organizations. Common issues for critical care nurses were identified, including concerns over staffing levels, working conditions, educational programme standards and wages. Critical care nursing organizations were generally favourable towards the notion of establishing a World Federation of their respective societies. Some of the important issues that will need to be addressed in the lead up to the formation of such a federation are now being considered.

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## Introduction

Flexner's (1915) landmark identification of the traits possessed by professions began an era of inquiry into the organization of workers. For the next 50 or 60 years, researchers attempted to refine these traits by examining the 'true' professions of law, medicine and the clergy, and began comparing other groups of workers to these professions (Carr-Saunders & Wilson 1933; Greenwood 1957; Etzioni 1969). While nursing was previously labelled a 'semiprofession' (Etzioni 1969), concurrent with changes in conceptualizing the nature of professions (Larson 1977; Abbott 1988; Collins 1990; Larson 1990; Hugman 1991; Witz 1992) it has since achieved full professional status in many countries (Australian Institute of Health and Welfare 1998). Kimball's (1992) comprehensive historical analysis identified that expertise, service and associations were the three essences of a profession. This article focuses on this third essence, that of associations, which is also one of the 10 criteria that the International Council of Nursing (ICN) identified in 1992 as a requirement for an area of nursing to be considered a specialty. It documents the process by which an international association of specialist nurses in critical care is emerging.

Critical care nursing can be loosely defined as that specialty of nursing focused on the care and treatment of critically ill patients (CACCN 1996; BACCN 2001). This generally encompasses nurses working in intensive care units, whether generalized or specialized, in postanaesthetic recovery rooms, in emergency departments, in renal dialysis environments and even those who work with air-medical and retrieval teams. Around the world, many such nurses have developed professional organizations, associations and groups to provide support networks for the specialty and those nurses who identify with it. The more established associations trace their beginnings back to the 1960s and 1970s, some 10 years or more after the establishment of intensive care units (ICUs) in their respective countries (Hilberman 1975; Fairman 1992; Fairman & Lynaugh 1998; Daffurn & Wiles 2001). Whilst it is assumed that many of these associations of critical care nurses have well-defined roles and functions

within their country, little documented literature exists that describes these associations and their functions from a global perspective. In fact, the authors of the present report were unable to locate a single reference or index of all known critical care nursing organizations. Without such a database, it is difficult to gain any perspective on the challenges and issues commonly faced by these specialist nurses.

Historically, critical care nursing organization (CCNO) leaders from around the globe have established forums at the 4-yearly World Congresses of Intensive Care. The need and value of a stronger international network of CCNOs has been discussed at these forums (See Appendix I). A small number of nursing organizations have attempted to use the World Federation of Intensive Care and Critical Care Medicine (WFICCCM) as a vehicle to establish a nursing network. In 1993, the WFICCCM established the first nursing position on the 15-member board of directors with the hope that this initiative might drive such a development. Since that time, only Australia and the United States have maintained nursing society membership with the WFICCCM, with CCNOs from Spain, Britain and Canada having short-lived membership. This article describes a three-phased process in the development of an international critical care organization. The aim of the first phase was to develop a register of all known CCNOs in the world. The purpose of the second phase was to understand the universal concerns and unique issues faced by critical care nurses around the world. The purpose of the final phase, which is currently underway, is to identify how respective organizations might develop, including their mission, goals, structure and processes such as communication and regional networks, if sufficient interest in international collaboration exists. This article describes the results of the first two phases.

## Method

### Phase I

The focus of Phase I, conducted from 1998 to 1999, was to identify as many CCNOs as possible and then



make contact with a reliable senior member in each organization. To accomplish this, the authors first formed a reference group and contacted as many colleagues in countries around the world to obtain their name, address and contact details. Second, a list of the names and addresses of all nurses who attended a World Summit Meeting of CCNOs at the 7th World Congress on ICU in Ottawa, August 1997, was obtained. The third step in this first phase involved contacting the International Council of Nurses (ICN) who agreed to send each of their 200 member organizations a letter from the research team informing them of the study. The letter asked them to make contact with either the CCNOs in their country or (if a CCNO did not exist) a senior and reliable critical care nurse. The letter from the research team was written in English and translated into French and Spanish, thus encompassing the three official languages of the ICN. The ICN also provided the principal author with contact details of all known CCNOs.

## Phase II

Phase II, completed in 2000, was a survey of all known CCNOs. In countries where CCNOs did not exist, individual critical care nurses were surveyed using data from Phase I. A semistructured survey was sent, either by mail, facsimile or e-mail, to contacts in 44 countries (Table 1). Participants were told that the aims of the survey were to:

- 1 obtain an overview of their organization and its activities in their country,
- 2 identify the major issues and concerns for critical care nurses in their country,
- 3 determine their organization's interest in being part of an international communication network,
- 4 identify their organization's interest in supporting the establishment of an International Society of Critical Care Nursing Organizations, and
- 5 obtain their perspective on the mission of such a society.

The first part of the survey was demographic in nature, with questions about official organization contact details, number of members, etc. The second part of the survey asked respondents about the issues facing critical care nurses in their country.

**Table 1** Countries responding to the survey (Phase II)

<i>The Americas</i>	<i>Europe and Africa</i>	<i>Asia and the South Pacific</i>
Canada (1200)	Iceland (75)	Korea (2000)
USA (65 000)	Britain (3200)	Hong Kong (500)
Mexico (200)	Norway (1700)	Australia (2500)
	Belgium	Taiwan (NA)
	Italy 2500	New Zealand (130)
	India (NA)	Japan (1300)
	Turkey (300)	Philippines (350)
	Slovenia (300)	
	Greece (115)	
	Germany (850)	
	Denmark (2700)	
	Ireland (400)	
	France (225)	
	Finland (1456)	

The number of members in each society are shown in parenthesis after the name of the country.  
NA, not available.

They were asked to rate the importance of 14 issues for their country on a 10-point scale (where 1 = not important and 10 = very important). A modified Delphi technique (Turoff 1975) with international critical care nursing experts was used to identify the issues. Respondents were then asked to expand on the three main issues facing critical care nurses in their country. The third section of the survey focused on services of their organization. Using the same Delphi technique, 15 services were identified, then questions were asked, focusing on the organization's provision of these services, with 'yes' and 'no' responses possible. Respondents were then asked to rate the importance of these services, irrespective of whether or not they were currently undertaken in their organization, on a 10-point scale (where 1 = not important and 10 = very important).

The final section of the survey gathered information on support for the development of an international critical care nursing society. Thus, respondents were asked whether their country/organization would participate in such a society, what they perceived the mission and functions of such a society should be and what financial support,



if any, their organization would be willing to contribute to the formation and ongoing operation of such a society.

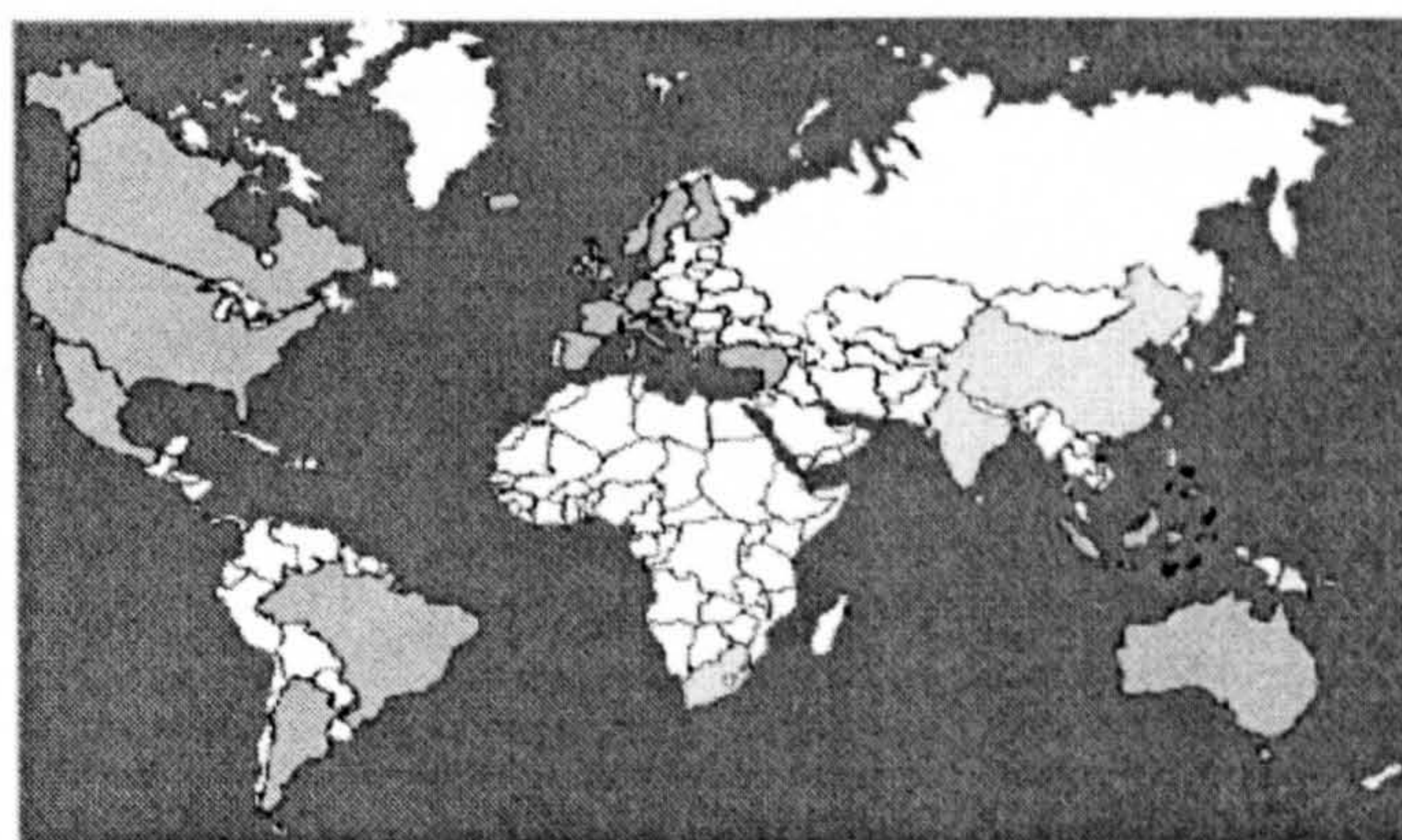
The focus of Phase III, which is currently underway, is to develop such an international society. Paramount is identification of a sustainable framework that facilitates collaboration, communication and, importantly, the advancement of the specialty of critical care nursing, including practice, education and research. By reporting on the first two phases we hope to further this next phase.

### Results

In total, 73 contacts from 44 countries were identified in Phase I of the study. These contacts were located in each continent and region of the world. For convenience, countries were divided into three geographical regions (Europe/Africa, the Americas and Asia/South Pacific; see Fig. 1). In Phase II, the 44

countries were sent the survey: 26 surveys were sent by e-mail; 10 by facsimile; and nine by post. A total of 24 countries responded, representing a response rate of 55%. Eighteen of the 24 surveys were returned by e-mail, six by facsimile and none by post. Table 1 identifies the responding countries and their description of membership size. Twelve countries reported having ≤ 1000 members, six reported having 1001–2500 members, two reported having 2501–5000 members, and one country – the United States – reported having 65 000 members. Two countries did not provide information on membership size because they did not have an organized society.

When asked to identify the issues that were currently important to them, almost every country identified inadequate staffing levels as being the most important issue for critical care (Table 2). Other important issues included working conditions, access to quality educational programmes



Americas	Euro-Africa		Asia/South Pacific		
Argentina	Austria	Finland	Netherlands	Australia	Papua New Guinea
Brazil	Belgium	France	Norway	China	Philippines
Canada	Bosnia	Germany	Slovenia	Hong Kong	Singapore
Costa Rica	Croatia	Greece	Spain	India	Taiwan
Mexico	Czech Republic	Hungary	South Africa	Indonesia	
Puerto Rico	Denmark	Iceland	Sweden	Japan	
USA	Britain	Ireland	Switzerland	Korea	
Uruguay	Estonia	Italy	Turkey	New Zealand	

Fig. 1 Critical care organizations/contacts identified (Phase I). Dark grey, countries with critical care nursing organizations (CCNOs); light grey, no CCNOs, but contacts known; white, no contacts at all.



**Table 2** Mean responses for important issues\* for critical care nurses

<i>Issue</i>	<i>Europe</i>	<i>Americas</i>	<i>Asia/South Pacific</i>	<i>World mean</i>
Staffing levels	8.91	10.00	9.67	9.24
Working conditions	8.64	10.00	8.83	8.86
Access to quality educational programmes	8.73	8.00	9.33	8.76
Wages	8.55	9.33	8.33	8.52
Formal practice guidelines/competencies	8.64	7.67	8.33	8.38
Work activities/roles	8.18	9.00	8.33	8.33
Teamwork	8.45	7.00	8.67	8.29
Extended/advanced practice	8.20	7.33	7.83	7.90
Relationships with doctors	7.91	7.00	8.00	7.76
Formal credentialling processes	7.40	7.67	7.83	7.60
Use of technologies	6.91	7.67	8.00	7.38
Facilities and equipment	6.82	7.00	7.83	7.24
Relationships with other nursing organizations	6.55	7.33	7.33	6.90
Relationship with other health groups	6.18	7.00	7.67	6.76

\* Results are presented on a scale of 1 (not important) to 10 (very important).

**Table 3** Services/activities provided\* and the importance attached to each

<i>Service or activity</i>	<i>Provided</i>	<i>Europe</i>	<i>Americas</i>	<i>Asia/South Pacific</i>	<i>World mean</i>
Professional representation	17 (71%)	9.14	9.33	8.00	8.75
National conferences	19 (79%)	9.44	10.00	6.83	8.67
Standards for educational courses	13 (54%)	9.50	8.00	7.67	8.67
Practice standards/guidelines	16 (67%)	9.00	9.00	7.67	8.40
Workshops/education forums	18 (75%)	8.56	10.00	6.50	8.29
Credentialling process	12 (50%)	9.22	9.33	6.33	8.25
Journal	16 (67%)	8.30	8.50	7.00	7.93
Local conferences	17 (71%)	8.30	10.00	5.67	7.81
Newsletter	16 (67%)	8.29	7.00	7.17	7.73
Initiate, conduct or lead research studies	13 (54%)	8.70	8.50	6.33	7.58
Training/skill-acquisition course (e.g. Advanced life support)	13 (54%)	8.20	10.00	6.50	7.42
Study/education grants	9 (38%)	9.50	7.00	5.50	7.00
Industrial/union representation	6 (25%)	6.40	5.50	3.33	7.20
Website	15 (63%)	7.71	8.00	6.00	6.79
Research grants	7 (29%)	10.00	6.50	5.33	6.43

\* Results are presented on a scale of 1 (not important) to 10 (very important).

and wages. Worldwide, on average, only two issues – relationships with other nursing organizations and relationships with other health groups – were rated with a value of < 7 on the 10-point scale.

Table 3 presents an overview of the types of services and support provided by CCNOs to their members. Of the 15 service or activity choices, seven were currently being provided by two-thirds of the



organizations. The respondents perceived professional representation, national conferences and standards for educational courses as the three most important activities that these professional organizations could provide for critical care nurses in their countries. Interestingly, the provision of funding grants, a website and industrial/union representation were ranked very low against the other options in this question.

Respondents were asked if their CCNO/country would like to participate in an International Society (Network) of CCNOs. All but two responded positively. The remaining two stated that they did not know and would need to discuss the issue further.

Respondents identified several activities they perceived that such a society could provide. These activities were then grouped into the categories of practice, education, research and professional. Practice activities included exchange of information, staff exchange programmes and benchmarking practices. Educational activities encompassed study tours and sharing educational programmes and ideas. The research-related activity identified was facilitating the conduct of international research. Professional activities comprised the bulk of the suggestions, and included gaining access to

conference speakers, worldwide conferences, development of international standards and mutual inspiration.

Nineteen of the 24 respondents suggested English as the first language of choice for international communication, two selected French and three selected other languages. Of the five who did not select English as their first choice, all selected it as their second.

When asked the extent to which they could financially contribute to the administration and communication functions of an international society, one responded that no support could be provided and eight did not know. Fifteen indicated that they could provide up to \$200 (US) per annum. In a separate question, respondents were asked if they could support a contribution of up to \$750 (US) per annum; seven responded positively.

When asked what activities and services an international society of CCNOs might offer member organizations and critical care nurses internationally, most suggested a website, international conferences and study exchanges as being of most value; providing international education and research support, and a journal, were also seen as being of benefit (Table 4).

Table 4 Potential services/activities\* for an international society

<i>Service and activity</i>	<i>Europe</i>	<i>Americas</i>	<i>Asia/South Pacific</i>	<i>World Mean</i>
Website	9.64	10.00	8.00	9.19
Co-ordinate/support international conferences	8.73	9.33	9.17	8.90
Co-ordinate/support international study exchanges	8.55	9.33	9.33	8.86
Provide international guidelines/principles relevant to critical care practice	8.36	10.00	9.00	8.74
Co-ordinate/support international education	8.64	8.67	8.83	8.67
Co-ordinate/support international research projects	8.45	8.33	8.83	8.57
Journal	8.55	7.67	9.17	8.52
Make representation to national and international bodies on issues of health and human society	8.27	9.33	8.67	8.43
Newsletter	7.45	7.67	7.67	7.48

\* Results are presented on a scale of 1 (not important) to 10 (very important).



## Discussion

This study was designed to identify CCNOs worldwide and to document their services in addition to their perceptions regarding the development of an international society. Whilst a variety of strategies were used to identify CCNOs, it is probable that some were missed. Furthermore, the fact that almost half of those identified did not complete the second phase – the survey – was disappointing. The reasons for this non-response could be varied, including lack of time/interest or a language barrier. It is possible that after learning about the potential for an international critical care society, a greater number of individuals and countries will make contact with the reference group.

It is interesting to note that the majority of the respondents described having organizations with  $\leq 2500$  members. Critical care units tend to have a high nurse-to-patient ratio. Two possible explanations for the relatively low membership numbers exist. First, we did not collect information on the numbers of critical care beds that each country had and it may be that some countries have relatively few beds and thus relatively few critical care nurses. Alternatively, it may also be that many critical care nurses do not join voluntary professional organizations. For example, Williams (2000) identified that there were  $\approx 9610$  intensive care nurses in Australia in 1997 and possibly double that number in critical care environments, yet the Australian College of Critical Care Nurses had fewer than 2500 members. Hence, many nurses did not join this professional organization.

The results suggest many strong similarities between CCNOs and critical care nurses in those countries who responded. Many of the responding countries are generally considered wealthier, with greater access to education and global communication tools, than those countries who did not respond. Additionally, English literacy was common in responding countries. Future studies will need to invest more time and resources into addressing the needs of countries where English literacy and e-mail technology are less common.

Respondents consistently identified several important issues that their organizations were

dealing with. Staffing levels, working conditions and access to quality education were the three issues rated as of greatest importance. Whilst each of these issues have been documented previously (Friedman 1990; Chaboyer & Retsas 1996; Chaboyer et al. 1997; Williams 1997; Dracup & Bryan-Brown 1998), this survey had identified that they are common to over 20 different countries and therefore require more attention from the organizations representing the needs of these groups. With such widespread acknowledgement of these issues, it appears essential for nursing organizations to reconsider how these specialist nurses are prepared, how nursing services are organized and how nursing care is delivered.

The two most frequently provided services or activities were national conferences and workshops/educational forums, with  $\geq 75\%$  of respondents stating that their organizations were involved in these ventures. Thus, it appears that these countries have a national venue for disseminating new knowledge and emerging technologies, and it seems apparent that meetings and forums such as these reflect the preference for face-to-face interaction of nurses when learning and networking. However, what is not known is the proportion of critical care nurses who actually attend these sessions.

The final aspect of the survey focused on the development of an international society of CCNOs and received overwhelming support. In order for such a society to be formed, a governing body comprising representatives from member organizations would probably be required. Additionally, terms of reference or some form of a constitution would be needed to define its role and purpose in order to ensure that any activities undertaken were of value and meaningful to the member organizations. It is clear that the World Wide Web and e-mail have dramatically improved international communication and indeed contributed to the success of this study. Additionally, the 1999 formation of the European Federation of Critical Care Nursing Associations (EfCCNa) made the identification and communication with European countries more efficient than with countries in lesser-organized parts of the globe. These progressions may prove to be invaluable.



able in the development of an international society of CCNOs.

The European experience in forming the EfCCNa suggests that 'regionalization' of the world into sub-groups may help to progress international and multinational communication and collaboration. Similar world groups, such as the World Health Organization, the ICN, the WFSICCCM and some geo-political-economic clusters, use a regional structure to support a larger world structure. In the process of establishing a worldwide network of CCNOs, consideration to the formation of regional clusters should be given. In this report we have suggested three, somewhat arbitrary, regions based on time zone and proximity. Clearly, other combinations are possible and should be considered.

Bucher (1988) suggested that a 'natural history' framework could be used to assess the emergence and evolution of health care occupations and their specialties. She described three phases in this evolution: emergence; consolidation; and transformation. In addition to several indicators, the emergence phase includes the development of formal organizations. Bucher (1988) described the second phase as a process of consolidation. She suggested that organizations should formalize further with developments such as societies and trade organizations. Findings from this study suggest that CCNOs are currently in this consolidation phase, internationally and perhaps even regionally and nationally.

Based on these survey results, we have identified several arguments in favour of an international society. We believe that these points can be used to further this debate and identify the relative merits of pursuing such an organization. The results clearly identify support for such a global organization of CCNOs. Depending on the mission, aims and goals of such a society, it may also indirectly promote the professional development of smaller organizations. While the study did not determine what the philosophy (including its mission, aims and goals) might be, it did identify the activities that would be supported. These activities were readily categorized as practice, education, research and professional development; hence, these same categories could be the foundation for the work on the purpose of such an organization. Given the huge variation in mem-

berships among CCNOs, and probably their relative wealth, it appears that proportional representation would result in an over-representation of English-speaking and 'Western' countries. It must also be recognized that, owing to wider economic issues faced by developing countries, some CCNOs may be very supportive of, and active in, such an international society, but be unable to financially contribute to it. A further challenge for such a global CCNO is an acknowledgement of the status of nursing in various countries and regions. Thus, the administrative structure, membership and funding of such an international organization must be dealt with in such a manner that is sensitive to wider economic and political issues.

## Conclusion

The concept of living in a 'global village' has become a reality for critical care nurses and organizations. Ready access to the World Wide Web has made international communication, collaboration and co-operation a reality. This study has identified the issues faced by CCNOs and their activities around the world, and affirmed support for the establishment of a world society or federation of such organizations to enhance collaborative partnerships between CCNOs and their members internationally. To date, developing and non-English speaking countries have been poorly represented in this work. We hope that the establishment of a World Federation of CCNOs, however termed or structured, can form a common foundation and linkage to most countries and will provide support to critical care nurses and their associations around the world.

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## Appendix I

History of formal international dialogue aimed at forming stronger international networks between critical care nurses and critical care nursing organizations (CCNOs)

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1985: 4th World Congress, Tel Aviv. Australia first ask to be admitted to the WFSICCM.

1989: 5th World Congress, Kyoto. Australia and USA applications are accepted by the WFSICCM. Sarah Sandford (USA) and Lorraine Ferguson (Australia) ask for a nursing position on the board.

1993: 6th World Congress, Madrid. CCNOs from Australia, USA, Britain and Spain are formally admitted to the WFSICCM and a Nursing member (Belinda Atkinson, England) is appointed to the board. Madrid Declaration on the Preparation of Critical Care Nurses is announced and signed. CCNOs pledge to improve international communication, collaboration and expansion.

1994: AACN Global Connections Conference, Toronto. CCNOs meet during this conference, share visions and pledge to improve international communication, collaboration and expansion.

1997: 7th World Congress, Ottawa. CCNOs meet during this conference, share visions and pledge to improve international communication, collaboration and expansion.

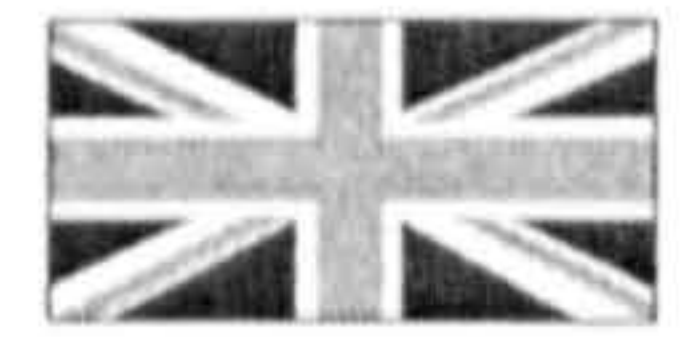
2000: BACCN Global Connections Conference, Edinburgh. Ged Williams presents results of the world CCNOs survey and outlines possibilities for a World Federation of Critical Care Nursing Organizations.

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AACN, American Association of Critical Care Nurses; BACCN, British Association of Critical Care Nurses; WFSICCM, World Federation of Intensive Care and Critical Care Medicine.



# Weaning from ventilation: a nurse-led protocol



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## INTRODUCTION

This paper describes the process and outcome of developing a nurse-led weaning protocol within a busy intensive care unit (ICU), with six intensive-care beds and two high-dependency care beds. The unit is based in an acute National Health Service (NHS) hospital, in the south of England. It admits approximately 500 patients per year, including some children. Specialist spinal and burn injury units are also based at the hospital, so that, in addition to general intensive care patients, the unit also admits a significant number of patients with spinal problems and burn injuries.

Approximately 50% of the unit's admissions are intensive care patients, of whom 95% are ventilated. Based on our year 2000 data of ventilated patients, the mean number of ventilator days per ICU survivor was four days (SD 0.65) and five days (SD 0.58) for non-survivors.

### Practice development team

A year ago, the ICU established a practice development team, known as the Radnor ICU Practice Development Team. The team was facilitated by an academic nurse practitioner.

Practice development teams are becoming more common in the UK, as a means of achieving nurse-led change. According to McCormack and Garbett, 2000 (cited Manley, 2000), the goals of a practice development team (PDT) are:

- ▶ To increase effectiveness in patient-centred care
- ▶ To enable the effectiveness of healthcare teams
- ▶ To transform nursing culture and context.

The practice development team consisted of nurses from all grades. Participation was voluntary. One of the first tasks for the team was to establish a list of priorities for nurse-led practice. Several practice issues were identified. The most pressing need was considered to be the development of a nurse-led weaning protocol.

### The need for a nurse-led weaning protocol

At the time that the practice development team was set up, it was common practice in the Salisbury District Hospital ICU for nurses to take the decision themselves to make small changes in ventilation in relation to arterial blood gas analysis.

However, nurses felt their ability to make decisions to progress the weaning process was hampered by having to seek medical approval for each step taken to reduce ventilation, e.g. changing from mechanical ventilatory support to T-piece support. They often felt they had the clinical expertise to determine the next step on the basis of their clinical assessment of the patient, but were required to ratify it first with medical colleagues.

The nurses also recognised that not all nurses have the same level of practice knowledge and expertise, and that there is always some degree of risk of nursing practitioners acting in ignorance. It was therefore felt that a clinical guideline, supported by relevant education, was required to safeguard the process.

In addition, not all patients are the same. Some have very complex respiratory needs that are influenced by other organ failures. Such patients may fall outside a clinical protocol, requiring more expert clinical assessment by the whole multi-disciplinary team.

### REASONS FOR WEANING

Patients who require long-term ventilation have a mortality rate of 30–40% (Scheinhorn *et al.*, 1994). Intensive care is a costly service to provide. Prolonged ventilation may increase the risk of complications. Thus, reducing patients' length of stay in ICU, through timely weaning, is a cost-effective strategy. In addition, shorter ICU stays result in better use of available resources. Some studies have shown that using standardised approaches to weaning from mechanical ventilation can shorten the duration of ventilation (Norton, 2000). However, based on systematic



review, there is a limited amount of evidence to suggest that nurse-led weaning reduces the ventilation time (Price, 2001).

Weaning is defined as the process of assisting patients to breathe spontaneously without mechanical ventilatory support (Knebel *et al.*, 1998). The aim of weaning is for the patient to contribute to the work of breathing from an early stage (Tobin and Alex, 1994). However, this can present a very challenging workload for the patient, since respiratory muscle atrophy begins 72–96 hours after full ventilation is commenced (MacIntyre, 1988).

Enabling the patient to breathe spontaneously, while remaining ventilated, can reduce the need for sedation and shorten the weaning process. It reduces the time spent in ICU, resulting in physical and psychological benefits (Jenkins, 1997). These include:

- ▶ Reduced risk of post-operative complications. The risk of ventilator-associated pneumonia appears to be related to duration of mechanical ventilation (Clochesy *et al.*, 1997).
- ▶ Earlier return to independence and resumption of normal daily activities.
- ▶ Promotion of rapid recovery and rehabilitation (Myers, 1985).
- ▶ Regaining a normal sleep pattern (Ashworth, 1987).
- ▶ Reduced levels of stress associated with being in ICU for both the patient and family (Clarke, 1984).
- ▶ Psychological boost to the patient's well-being, by leaving the ICU earlier and returning to a more normal environment.

The Intensive Care Society (2000) in the UK has recently published guidelines on when and how to wean. However there is still much controversy about the ideal procedure.

### PSYCHOLOGICAL FACTORS AND WEANING

An illness that is severe enough to require mechanical ventilation intensifies not only the physical factors with which the patient must cope, but also the psychological factors (Logan and Jenny, 1997). Psychological factors include:

- ▶ anxiety
- ▶ disorientation
- ▶ loneliness
- ▶ sensory deprivation and overload
- ▶ distress caused by the inability to communicate
- ▶ pain
- ▶ fear of the unknown
- ▶ fear of dying.

Weaning from mechanical ventilation can intensify some of these factors. If the patient is not properly prepared and informed, uncertainty, fear and the inability to communicate this fear can lead to increased anxiety.

Anxiety may precipitate shortness of breath and a fear of death and abandonment, as devices are withdrawn or ventilatory support reduced. Anxiety and fear may cause further physical distress by stimulating the sympathetic nervous system to cause bronchoconstriction. This may result in increased airway resistance, work of breathing and oxygen demand.

Often, patients are initially frightened to breathe without the ventilator. The psychological transition from dependency upon it, to a desire to be free of its constraints, is an important time for the patient. It is a time that often requires skilled nursing care.

### HOW WE DEVELOPED A NURSE-LED WEANING PROTOCOL

Having established the membership of the practice development team and our priorities, we set about our first task, which was developing the weaning protocol.

We followed the four-phase clinical problem-solving model of Rosenberg and Donald (1995):

1. Identify the clinical problem
2. Search the literature
3. Evaluate the literature
4. Determine a clinical strategy.

The whole group met approximately once every month. Smaller, task-orientated teams met more frequently. In this way, we developed an effective way of working together.

#### Identifying the clinical problem

The first task was to identify the clinical problem. We undertook this through a group process of reflective inquiry. What became clear to us was that we could not consider the process of weaning from mechanical ventilation in isolation. A more complete picture was required that began with assessment of the patient's readiness to wean. We concluded that there were five distinct stages in the weaning process:

- ▶ Assessment of the patient's readiness to wean
- ▶ Weaning from ventilation
- ▶ Assessment of patient readiness for extubation
- ▶ Observation and monitoring following extubation
- ▶ Re-intubation (potential).

#### Searching and evaluating the literature

We used the five stages identified in the weaning process, as the basis for our literature search strategy, and divided the workload equally among the team.

Our objective was to make sure that every stage of the weaning process in our protocol would be based on research evidence. For the most part, we achieved this objective. However, for some parts of the protocol, we needed to refer to our own clinical knowledge and experience, or to that of our medical colleagues.

What our literature search did highlight was the dearth of high-quality research evidence available to inform our practice. Some literature was quite old, and much of what we found was based on clinical opinion and experience. Randomised, controlled trials and systematic reviews were rare.

#### Assessment of readiness to wean

We developed a set of baseline criteria, from our review of the evidence, which supports nurses' assessment of the patient's readiness to wean (Table 1). For further reading related to this section, see Armstrong (1995), Beale (1994) and Norton (2000).

Before weaning is begun, there should be clinical evidence that the disease process is resolving. Lung injury is often the primary disease (e.g. chronic obstructive pulmonary disease (COPD) or pneumonia), or it may be secondary, as in multiple organ failure resulting from septicaemia.

Weaning will be unsuccessful if it is attempted before there has been adequate recovery of lung injury. Failure to wean is likely in these circumstances, due to hypoxia and respiratory muscle fatigue.  $PaO_2:FiO_2$  (arterial oxygen: inspired oxygen ratio) and lung compliance are indicators of persistent lung disease. It is unwise to attempt weaning unless there is clear evidence that these variables are returning to normal.

Improvement on the chest X-ray and the return of normal



**Table 1. Criteria for commencement of weaning from mechanical ventilation\***

Criteria
▶ The patient's underlying disease process is resolving (Cull and Inwood, 1999)
▶ The patient is normothermic and adequately perfused
▶ The patient's systolic blood pressure is >90 mmHg on minimal, or without, inotropic support. If patient is on inotropes, discuss weaning with medical colleague (Anderson and O'Brien, 1995)
▶ The patient has satisfactory arterial blood gases: PaCO <sub>2</sub> <7 kPa, PaO <sub>2</sub> >10 kPa, FiO <sub>2</sub> <40% (Anderson and O'Brien, 1995). NB. Unless different values are agreed by medical colleagues
▶ The patient's respiratory rate is <30 breaths per minute; airway pressure <30 cmH <sub>2</sub> O; and PEEP <5 cmH <sub>2</sub> O. The patient has no severe electrolyte or metabolic imbalance (Cull and Inwood, 1999)
▶ The patient has no clinical evidence of bleeding, with Hb >8 g/dL (Anderson and O'Brien, 1995)
▶ There are no neuromuscular blocking agents in progress

\* FiO<sub>2</sub> = fraction of inspired oxygen; Hb = haemoglobin level; PaCO<sub>2</sub> = partial pressure of arterial carbon dioxide; PaO<sub>2</sub> = partial pressure of arterial oxygen; PEEP = positive end expiratory pressure

breath sounds are other indicators that the disease process is resolving.

Ensuring the patient has adequate pain control is an obvious necessity. However, opiates should be titrated accurately to minimise the risk of respiratory depression.

In the UK, it is primarily a matter of clinical judgement, supported by a range of clinical information rather than a particular set of absolute values, that determines the decision to commence weaning (Beale, 1994).

**Pyrexia:** Pyrexia increases the work of breathing, therefore the patient should ideally be normothermic before weaning commences. Cold patients utilise more energy to keep warm (increasing oxygen demand). Peripherally shut down patients may retain sedatives.

**Cardiovascular status:** Patients should be cardiovascularly stable prior to commencement of weaning. Returning to spontaneous ventilation may increase cardiac demand and has the potential to worsen an already poor cardiac function by increasing stress. Optimising cardiac function may, for example, require the use of angiotensin converting enzyme (ACE) inhibitors, diuretics or nitrates to offer patients with poor ventricular function the best chance of a successful weaning outcome. Such decisions should be made with medical colleagues. Inotropic support may mask cardiac deterioration due to weaning, and should ideally have ceased prior to commencement of weaning.

**Arterial blood gas values:** The arterial blood gas values given in Table 1 are ideal values. Different values may be agreed with medical staff, particularly for patients with diseases such as COPD. Carbon dioxide (CO<sub>2</sub>) monitoring is useful in patients with normal lung physiology, but it may be of limited value in patients with chronic lung conditions. Nurses should also be aware of metabolic conditions, which may compromise patients. For example, diuretic use in a COPD patient may cause a metabolic alkalosis, which in turn may reduce the respiratory drive.

Our guidelines state that the patient should be normopnoeic, as asynchronous breathing patterns and tachypnoea are signs of distress, particularly when the cardiovascular system is compromised.

**Electrolyte balance:** The management of electrolyte balance necessitates the consideration of feeding. Adequate nutrition and sup-

plementary minerals are vital to provide energy for weaning. Inadequate nutrition can lead to breakdown of respiratory muscles.

Electrolyte imbalance can inhibit diaphragmatic breathing. Excessive carbohydrates and development of septicaemia may increase respiratory drive. Reduced phosphate levels may affect haemoglobin release of oxygen and low magnesium levels may impair cardiac function.

**Bleeding:** This may result in cardiovascular instability, resulting in poor oxygen delivery. A haemoglobin level of at least 8 g/dL should be ensured. Higher than normal levels of haemoglobin increase the viscosity of blood resulting in reduced capillary blood flow and poor tissue oxygenation. COPD patients may require a higher haemoglobin level to optimise oxygen transport.

**Neurological status:** A reduced neurological status may not necessarily prevent a patient from being weaned. If all other criteria have been met, then weaning can usually begin. Patients who have no pre-existing respiratory disease normally have an adequate respiratory drive, even though they are not fully conscious.

Cessation of sedation is desirable, prior to starting weaning. However, its presence is not an absolute contraindication, and some patients may require background sedation to help keep them comfortable.

Neuromuscular blocking agents should be stopped before weaning. Most agents have a relatively short half-life and weaning can begin soon after their cessation. However, if the nurse is unsure whether their effect has been negated, nerve conduction should be tested with a nerve stimulator.

### **Weaning from mechanical ventilation and readiness for extubation**

The protocol that we developed covers the second and third stages of the weaning process. These are weaning from mechanical ventilatory support and assessment of readiness for extubation (Figure 1).

The protocol is designed to assist the nurse in her decision-making process. It may also be used to monitor and improve the quality of care. Potentially, it should reduce costs. It is part of a package of information, which includes guidelines for its use.

There are some important points that should be considered during the weaning process (Table 2).

The protocol was developed according to our evaluation of the best available evidence (Table 3). There are some parameters, which we have used, that were reported in the literature for which no references were given to support them. However, we have accepted their validity on the basis of the clinical expertise of the authors. Other parts of the protocol, as stated above, are based on our own experience.

**Patient factors:** Clearly, no two patients are the same and the speed and success of weaning will vary. The nurse will need to take into account the length of time the patient has spent ventilated, loss of nerve supply to respiratory muscles including polyneuropathy associated with critical illness, lung pathology and whether there is a chronic respiratory history.

Because each patient is unique and will respond according to what is 'normal' for him, the nurse looking after him must use her own clinical judgement in relation to her ongoing observation and assessment. She should refer to a senior nurse or medical colleague if further guidance is required.

**Spinal injuries:** In our ICU we admit patients with high spinal injuries. They require a different weaning protocol due to



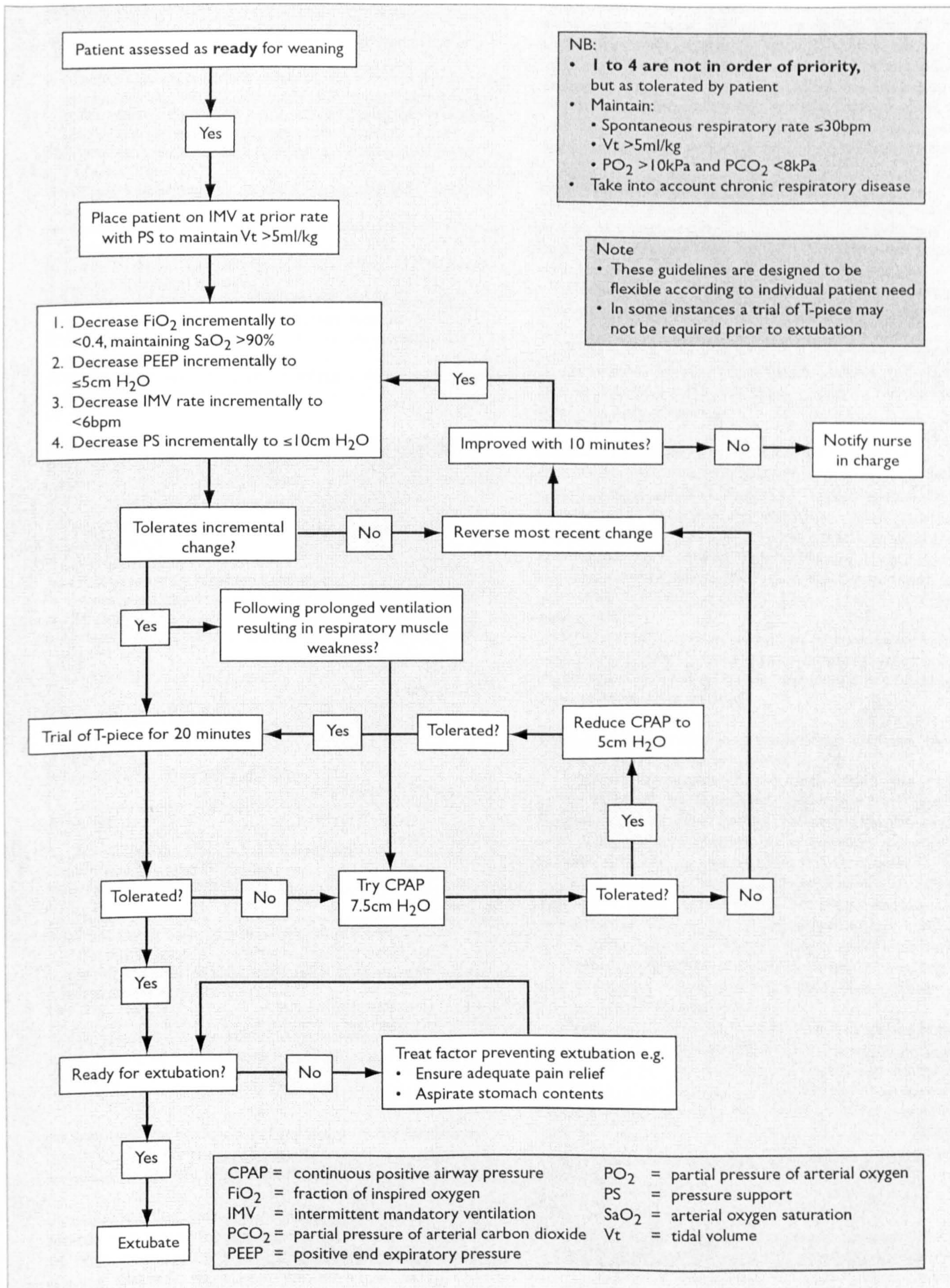


Figure 1. Nurse-led weaning protocol.



**Table 2. Points to consider during the weaning process**

- ▶ A metabolic alkalosis can inhibit respiratory drive and an acidosis will increase ventilatory drive. (Hanneman, 1999)
- ▶ Adequate nutrition and supplementary minerals are vital to provide energy for weaning (Armstrong, 1995; Grossbach-Landis, 1983). Inadequate nutrition can lead to the breakdown of the respiratory muscles, and electrolyte disorders. Phosphate is important for muscle work; its depletion may lead to diaphragmatic weakness. Excessive carbohydrates may lead to hypercapnia and increased ventilatory drive (Hanneman, 1990)
- ▶ Abdominal distention due to ileus, flatus or constipation can produce diaphragmatic tamponade (Hadfield, 1999)
- ▶ Maintain haemoglobin above 10 g/dL in patients with chronic obstructive pulmonary disease to maintain oxygen-carrying capacity (Henneman, 1990)
- ▶ Treat pyrexia above 38°C and shivering, as both these features may increase oxygen consumption (Manthous *et al.*, 1995)
- ▶ Patient comfort may minimise the need for analgesia, which can depress the respiratory drive. Careful positioning will optimise patient comfort
- ▶ Adequate pain control is a priority, as pain will increase respiratory rate and may increase oxygen consumption
- ▶ Adequate rest and sleep must be planned for. Increased ventilatory support may be required overnight, to allow the patient to rest

**Table 3. Sources of evidence associated with specific parameters in the protocol\***

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>▶ For respiratory rate &gt;35 breaths per minute, as a sign of distress</li> <li>▶ Haemoglobin saturation &lt;90%</li> <li>▶ Heart rate &gt;140 bpm</li> <li>▶ Able to clear secretions</li> <li>▶ Ventilator rate weaned to &gt;6 breaths per minute</li> <li>▶ Respiratory rate ≤25 breaths per minute while ventilated, as a sign of no distress</li> <li>▶ PEEP ≥5 cmH<sub>2</sub>O</li> <li>▶ 10-minute time period to see improvement following reversal of the most recent weaning change</li> <li>▶ Trial of T-piece</li> </ul> | <p>Esteban <i>et al.</i> (1995)</p>                                |
| <ul style="list-style-type: none"> <li>▶ Decrease oxygen delivery to &gt;50%</li> <li>▶ PaO<sub>2</sub> &gt;10 kPa</li> <li>▶ PaCO<sub>2</sub> &lt;7 kPa</li> <li>▶ Respiratory rate below 30 breaths per minute</li> </ul>  | <p>Anderson and O'Brien (1995)</p>                                 |
| <ul style="list-style-type: none"> <li>▶ Tidal volume = 5 ml per kg</li> </ul>   | <p>Dreyfuss <i>et al.</i> (1988)</p>                               |
| <ul style="list-style-type: none"> <li>▶ Underlying disease process is resolving</li> <li>▶ No severe electrolyte or metabolic imbalance</li> </ul>  | <p>Cull and Inwood (1999)</p>                                      |
| <ul style="list-style-type: none"> <li>▶ Normally, pressure support is not weaned below 10 cm H<sub>2</sub>O. Below this point, the positive pressure does not overcome the resistance of the ventilator circuit, humidifier and endotracheal tube. Therefore, further reduction below this level may increase the work of breathing.</li> </ul>   | <p>Bernstein <i>et al.</i> (1993); Nathan <i>et al.</i> (1993)</p> |

kPA = kilopascal (unit of pressure); PaCO<sub>2</sub> = partial pressure of arterial carbon dioxide; PaO<sub>2</sub> = partial pressure of arterial oxygen; PEEP = positive end-expiratory pressure.

respiratory nerve blockade and the necessity for diaphragmatic breathing. Such patients are normally weaned onto biphasic airway pressure (BiPAP) prior to discharge to the spinal unit.

**Burn injuries:** Our burn-injured patients often require frequent admissions to theatre for dressing changes and skin grafting. They are often ventilated for a long time and can present a difficult weaning challenge. In patients with an inhalation injury, it is advisable to check for airway oedema before beginning weaning.

**Patient monitoring:** The patient should be observed throughout the weaning process and after extubation for any signs of respiratory distress so that any underlying cause may be treated. Some patients may need to be returned to a period of increased ventilatory support on several occasions, e.g. overnight, so that they do not become over-tired. In our experience, some patients have become over-tired. It is therefore important to plan adequate rest and sleep periods as part of the weaning process.

**Assessment of readiness for extubation**

The patient is considered ready for extubation when the weaning process is complete (Figure 1). If there has been any physiological deterioration, proceeding to extubation is extremely unwise. Conscious level is the most obvious deterioration.

The patient must be able to maintain an airway, cough, and clear secretions. Sometimes, if coughing is poor, secretions are copious.

If the patient is non-compliant, a mini-tracheostomy should be considered. Long-term ventilated patients and those with chronic respiratory disease will often require a full tracheostomy before weaning is begun.

**Observation and monitoring following extubation**

The aim of post-extubation observation is to monitor the patient closely, so that early intervention can be carried out. If a patient deteriorates to the extent that respiratory failure occurs, then it is a failure on our part that we have not recognised the signs of deterioration early enough. The importance of vigilant monitoring cannot be overstated. For further reading in this area, please see Becker and Ellstrom (1997), Hudak *et al.* (1990) and Simonds (1993).

Observation and monitoring can be considered from a systems point of view. Obviously, the respiratory system is the most important to monitor. However, this should not be done at the expense of the other systems.

**Respiratory observation and monitoring:** The rate, depth and rhythm of breathing should be monitored.

When hypoxaemia or hypercapnia occurs, the respiratory centre responds by increasing respiratory rate and depth. Patients with respiratory acidosis have rapid shallow respiration which may be caused by airway obstruction, possibly due to retained secretions, laryngeal spasm or lung disease.

Hyperventilation may be an indicator of anxiety or pain and may lead to respiratory alkalosis. Metabolic acidosis is characterised by an increase in rate of breathing and conversely, a severe metabolic alkalosis may reduce the respiratory drive resulting in slow, shallow breaths. Kussmaul's breathing – often seen in diabetic ketoacidosis and renal failure – is characterised by a slow rate with deep breaths.

An increase in respiratory rate of as little as two breaths per minute above the patient's normal may be significant and treatment may need to be commenced immediately. As the respiratory rate increases the work of breathing will become very tiring and will eventually lead to exhaustion requiring ventilation. This may take minutes or hours depending upon the patient's reserves. There are several important signs of laboured breathing, including:

- ▶ Flaring of the nostrils.
- ▶ Pursing of the lips on exhalation to increase auto-PEEP.
- ▶ As respiratory failure worsens, use of the accessory muscles of breathing may occur. Intercostal retraction may be seen, i.e. sucking in of the muscles and skin be-



tween the ribs and above the clavicles and sternum during inspiration.

- ▶ Patients with COPD often prop themselves up on outstretched arms to improve chest expansion.

Breath sounds are an important source of information.

- ▶ Listening to the chest with the diaphragm of the stethoscope may reveal absent breath sounds over the affected part of the lung and can be caused by pneumothorax or pleural effusion.
- ▶ Diminished breath sounds, i.e. poor airflow to an area of lung, can be caused by emphysema or pleural effusion.
- ▶ Bronchial sounds are normal when heard over the trachea. When they are heard in the peripheral lung fields, they indicate an area of consolidation (e.g. pneumonia).
- ▶ Fine crackles are light continuous sounds heard as small airways are reopened or re-inflated during end inspiration. They can occur in pneumonia and congestive heart failure. Coarse crackles are rumbling low-pitched sounds that occur with pneumonia, asthma and bronchitis.
- ▶ Wheezing is a high-pitched squeaky whistling sound produced by the passage of air through narrowing bronchi as in asthma or bronchospasm. The wheeze is superimposed on the expiratory phase. Wheezes heard during inspiration are often due to secretions in the large bronchi and may disappear or become less numerous after coughing.
- ▶ Pleural friction rub is a creaking coarse sound heard when inflamed and roughened pleura rub against each other and can be due to pleurisy or pleural effusion.
- ▶ Stridor is a loud crowing sound heard during inspiration. A foreign body, laryngeal spasm or exudate related to infection, can produce it.

The patient may become dyspnoeic following extubation, i.e. they have difficulty in breathing or shortness of breath. This can be very frightening, causing distress, which in turn compromises the respiratory status. A calm, supportive attitude and kind words can be very effective in reassuring an anxious patient. There is nothing more frightening than not being able to breathe (Todres *et al.*, 2000).

Central cyanosis is a serious sign of poor respiration. It is noted on the tongue and lips when the patient has a low PO<sub>2</sub>.

**Other observations:** When respiration is compromised and oxygen levels fall, the sympathetic nervous system usually compensates by increasing the heart rate and constricting blood vessels in an effort to improve cardiac output. The patient's skin may become cool, pale and clammy. Eventually, as myocardial oxygenation diminishes, blood pressure and cardiac output fall and changes in heart rate occur. Cardiac arrhythmias may develop. A severe hypoxic episode may result in bradycardia, and can occur very suddenly in infants.

Small changes in oxygen delivery to the brain, and a rise in arterial carbon dioxide levels can affect brain function and the patient's behaviour. Initially, cerebral hypoxia causes anxiety and restlessness, which leads to confusion, agitation and lethargy. The primary sign of hypercapnia is headache and occurs as a result of cerebral vessels dilating in an effort to increase the blood supply to the brain. Classically, severe hypercapnia is characterised by a 'cherry red' facial complexion. If carbon dioxide levels continue to rise, the patient is at risk of seizure and coma.

The nurse should know the signs of respiratory distress and

observe for them throughout the weaning process, initiating treatment to correct underlying respiratory problems and associated alterations in the acid-base balance. Regular chest physiotherapy, postural drainage and pharyngeal suction may be required to improve respiratory status.

**Pain:** This should be treated promptly with effective use of analgesia. Whenever possible, non-opiate drugs, that do not reduce respiratory drive, should be given. Particular attention should be given to the pain felt by patients following abdominal and thoracic surgery. If necessary, an epidural should be inserted prior to commencement of weaning. Optimal patient positioning can make a lot of difference; diaphragmatic excursion should be optimised.

### Re-intubation

Assessment of the need for re-intubation is based on the deteriorating patient's condition, in relation to:

- ▶ Respiratory function
- ▶ Cardiovascular status
- ▶ Level of consciousness.

Specific criteria for re-intubation are not particularly helpful, as each patient will have a different reserve in relation to the work of breathing and a varying tolerance to levels of oxygen and carbon dioxide. However, adequate minute ventilation is an important factor, which can be estimated from the patient's minute volume; measured using a Wright's spirometer.

### CONCLUSIONS

Patients who require long-term ventilation have a high mortality rate and intensive care is a costly service to provide. Standardised approaches to weaning from ventilation may reduce the length of stay of patients in intensive care, which in turn may reduce the risk of complications.

Following the inception of the Radnor ICU Practice Development Team in Salisbury, UK, the decision was made to develop a unit protocol for nurse-led weaning. The protocol is presented in this paper. It is designed as a guide to assist the nurse in the decision-making process, and is based on an evaluation of the best evidence available to us at the time. Since no two patients are the same, the speed and success of weaning will vary. Thus, the aim of the protocol is to assist nurses in making clinical decisions. It does not provide strict *rules* for practice.

The protocol is based on evidence from the literature and our own experience. We believe it is sufficient to guide nurses through the weaning process for the majority of our patients.

Weaning success is usually described as the ability to maintain spontaneous ventilation for 24 hours following withdrawal of ventilatory support. Failure is a term often poorly defined, making comparison of different methods of weaning difficult. Specific criteria are not altogether helpful, as each patient will have a different tolerance. 'Failure' is also a very negative term, which can have a demoralising effect on patients. It is a term to be avoided when making a weaning 'contract' with a conscious patient.

We are in the process of evaluating our weaning protocol. As with all innovations, it is likely that we can make improvements to it. In the meantime, we are pleased to share our development with an international audience and look forward to receiving comments from other nurses.



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# Developing best practice in critical care nursing: knowledge, evidence and practice

Paul Fulbrook

## SUMMARY

- Because the current drive towards evidence-based critical care nursing practice is based firmly within the positivist paradigm, experimentally derived research tends to be regarded as 'high level' evidence, whereas other forms of evidence, for example qualitative research or personal knowing, carry less weight
- This poses something of a problem for nursing, as the type of knowledge nurses use most in their practice is often at the so-called 'soft' end of science. Thus, the 'Catch 22' situation is that the evidence base for nursing practice is considered to be weak
- Furthermore, it is argued in this paper that there are several forms of nursing knowledge, which critical care nurses employ, that are difficult to articulate
- The way forward requires a pragmatic approach to evidence, in which all forms of knowledge are considered equal in abstract but are assigned value according to the context of a particular situation
- It is proposed that this can be achieved by adopting an approach to nursing in which practice development is the driving force for change

**Key words:** Critical care • Evidence-based practice • Knowledge • Practice development

## INTRODUCTION

As I have progressed through my research and practice career, I have become more and more convinced that the so-called 'paradigm war' (Woodhouse, 1996) – in which knowledge and research methods are accorded paradigmatic significance – is a redundant debate within the research context. Knowledge comes in all shapes and forms, and there is a danger that strict adherence to a particular paradigm will ensure that data will be missed that could inform the research question. In research, the major strengths of a triangulated approach are confirmation and completion (Begley, 1996), and there are many arguments in nursing research for the research question to dictate the methodology and methods (Wolfer, 1993). Similarly, in practice, multiple methods may be used to gather information, which can be analysed to inform a particular issue.

The current drive for evidence-based healthcare means that nursing is required to demonstrate the basis for its practice, and there is a strong emphasis on research utilization within government policy (Department of Health, 1996, 1997, 1998). However, because nursing exists within a healthcare setting that remains dominated by medicine (which idealizes positivist research methodology), there is pressure to conform to traditional research approaches, not only to generate knowledge but also to value it. For example, the Cochrane Collaboration (Cochrane Library, 2002) values meta-analysis of randomized controlled trials as the highest level of evidence.

Critical care nursing requires an advanced level of both technical and human expertise. For example, a nurse caring for a multitrauma victim must draw on an extensive scientific knowledge base, which ranges from physiology and pharmacology through to psychology and sociology in order to be able to deliver care that meets the needs of both the patient and his/her family. Thus, by its very nature, the knowledge that informs practice must be drawn from many sources (Carper, 1978).

For example, the type of knowledge I have generated, related to temperature measurement (Fulbrook, 1993, 1997), is at the 'hard' end of science, whereas a very different sort of knowledge was generated using a phenomenological approach (Todres *et al.*, 2000). Yet, both

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are equally important in fully meeting the needs of the critically ill patient.

There is no type of evidence that alone can inform critical nursing practice. Currently, however, many critical care nurses, when considering what kind of knowledge constitutes 'evidence', refer only to experimental research-generated knowledge (Taylor-Piliae, 1998). My own work has utilized experimental, survey, qualitative, narrative and triangulated approaches. Each time, a different type of knowledge has been developed. Each time it had a different meaning for practice. Each time it had a different application. By its very nature, nursing requires a range of knowledge, or *evidence*, and borrows from many disciplines, yet the current situation in healthcare in the UK is that non-experimental evidence is regarded as low level (Evans and Pearson, 2001).

### EVIDENCE-BASED PRACTICE

The development of evidence-based practice in the National Health Service is one of the key policy drivers in the government's *new* health service (Department of Health, 1996). Within the mandate for *clinical governance* (Department of Health, 1998), there is a need for health care professionals to make better use of existing evidence, which may be used to inform practice. It may be argued that the introduction of evidence-based practice is more politically motivated than it is science based (Bradshaw, 2000).

There is often a dearth of evidence available to inform nursing practice and much of what does exist may not be relevant to human caring. One of the reasons for this is that traditionally, nursing has followed the medical model of theory generation, based on positivist philosophy and utilizing quantitative methods. More recently, as nursing had begun to develop its own knowledge base, there has been a distinct paradigm shift, which favours interpretive approaches to theory generation, employing qualitative methodologies such as phenomenology. However, some critics have suggested that as a consequence of this shift, nurse researchers have been guilty of 'throwing the baby out with the bath water', resulting in a negligent use of quantitative research approaches, warning that in ignoring experimental research nurses run the risk of overlooking some areas of knowledge (Poole and Jones, 1996). For example, owing to concerns about the marginalization of qualitative research, and its classification as 'low level' evidence, there have been calls for nursing to participate in systematic reviews (Evans and Pearson, 2001), and systematic review of qualitative research has now been established (Dixon-Woods and Fitzpatrick, 2001). Systematic reviews are widely accepted in healthcare as the most reliable way to manage large-volume research evidence (Evans, 2001). Whilst systematic

reviews do have a place in informing practice, they do not encompass the full range of different types of knowledge that nurses use.

Currently, nursing knowledge is derived from three paradigms: positivism, interpretivism and critical theory. The three world views coexist in an uneasy alliance (Copnell, 1998). However, many researchers contend that it is not the philosophical stance of the researcher that is important in nursing research, but it is rather the relevance of the research methodology and methods to address the research question (Burnard and Hannigan, 2000). Indeed, the recognition that fundamentally different types of problems require different methods has been helpful in liberating nursing from the early constraint of a positivist straightjacket (Wolfer, 1993). This is important in the critical care setting, where decision-making is complex (Currey and Worrall-Carter, 2001), where nurses draw upon a broad range of sources of knowledge to inform their decisions (Manias and Street, 2001) and where decision-making is related to critical care nurses' experience (Bucknall, 2000).

Providing clinically effective care for patients is the cornerstone of evidence-based practice (Regan, 1998); evidence may come from a variety of sources. Clinical effectiveness is defined by the Royal College of Nursing (RCN) as, 'doing the right thing in the right way for the right patient at the right time' (Royal College of Nursing, 1996, p. 3). Thus, to provide evidence-based clinically effective care, critical care nurses must draw on a variety of sources. This is the heart of the issue for nursing, which finds itself in something of a 'Catch 22' situation where, on the one hand it recognizes and supports the principles of evidence-based practice but on the other hand, much of the evidence it necessarily must refer to is considered low level. This is confounded by claims that much 'scientific' research is of poor quality, difficult to evaluate and may not be directly relevant to patient care (Parkin, 1998).

The key question is whether or not the current concept of evidence-based practice, with its roots in positivist science, has sufficient relevance to the practice of nursing, which embraces cultural, social and spiritual dimensions (Bradshaw, 2000).

The task for nursing as a profession is to both define and defend the nature of knowledge – and thus the nature of the evidence – required to provide clinically effective care. This means that, rather like researchers must look to the research question to establish the appropriate methodology, nurses must look to the patient-centred practice question to establish the appropriate type of evidence required. Often, the practice issue is complex. This means that a range of types of evidence might be required to determine the best way forward. What is important is that it is the



evidence that carries the weight of authority, rather than that of the doctor, nurse or any other healthcare professional (Clarke, 1999).

There are many typologies of knowledge. However, as debates about theoretical, practical, objective and subjective knowledge are not helpful to nurses in their everyday work (Liaschenko and Fisher, 1999), rather than considering knowledge from an epistemological stance, another way would be to consider knowledge in relation to the type of work that nurses do. Liaschenko and Fisher (1999) proposed a tripartite classification of knowledge based upon nursing work: case, patient and person. Case knowledge is general knowledge about, for example, disease processes, therapeutic protocols and pharmacology. Patient knowledge is knowledge that defines the individual within the health care system, for example, an individual's response to therapeutics. Personal knowledge relates to knowledge of the individual as a person. For example, knowledge about his/her social situation or ethical views. This classification is helpful in illustrating the dilemma that nursing has in locating evidence. It is easy to see how traditional evidence can be obtained to inform case knowledge, whereas patient and personal knowledge present a more difficult challenge, because these types of knowledge relate to the individual. Herein lies the problem for nursing. The type of knowledge most highly valued in healthcare is of the case type, whereas the type of knowledge nurses utilize in their practice is patient and person knowledge. For example, in a study of enteral feeding practices of intensive care nurses, it was found that the primary source of knowledge was based on information obtained in clinical practice, including discussion with peers (Belknap *et al.*, 1997).

The essence of nursing is in human caring, and the focus of nursing care is on meeting the needs of individual patients. As humans are behaviourally unique, there is little knowledge, of a generalizable nature, that can be applied to a single human situation. Nursing care is delivered by practitioners, who, by virtue of the type of work they do, individually assess patients and construct a unique plan of care based upon their assessment. Whilst the care plan might be based upon some evidence from the research literature, it is also based on evidence derived from information gathered from the patient and, the more difficult to articulate, personal knowledge, experientially gained from a series of nursing interactions over time. The resulting construct is an amalgamation of knowledge from several sources. Thus, when problems are of a human nature, there is no single solution and the nurse must base her complex decision-making on a range of sources.

For example, based upon the early research work of Hayward (1975) and Boore (1978), accepted evidence

is that it is beneficial for preoperative patients to be given information about their operation and what they can expect to feel like postoperatively. The generalizable knowledge is that this reduces postoperative pain and anxiety, and means that preoperative information giving is a routine nursing practice. This could be described as 'case' knowledge. However, based upon a nurse's assessment of an individual patient who is very anxious ('patient' knowledge) and afraid of hospitals ('person' knowledge), a nurse may well decide to override the case knowledge, thereby providing minimal information preoperatively. The nurse's assessment is that, in this instance, it would be detrimental to the patient, i.e. it would cause more anxiety. Another way to describe this process is clinical judgement.

Returning to the definition of evidence-based medicine most commonly cited, it is:

*...the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients...evidence based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research.*

Sackett *et al.* (1996, p. 71)

Clearly then, if this definition is applied to the post-operative nursing example given above, all the criteria for evidence-based practice have been met. There are some areas that can be questioned, however. It could be argued that the so-called (25-year-old) evidence the nurse used may not be applicable to contemporary practice and it may not be the best available. It resides within the domain of the individual nurse to ensure that his/her practice is guided by the 'best available' and most current evidence. What is important is that the nurse is able to articulate the basis for his/her decision. This raises a challenge for nurses, who may not have sufficient research knowledge to critically evaluate available evidence. Indeed, in a recent survey of Australian critical care nurses, 42% of the sample declared that they were not adequately prepared to evaluate research (Bucknall *et al.*, 2001). Thus, the logical conclusion is that these nurses were inappropriately prepared to apply the findings of research to their practice. In the UK, this was endorsed by Bradshaw (2000, p. 314) who stated, 'There are insufficient nurses equipped to evaluate what evidence is available let alone generate new evidence about the outcomes of practice'. Additionally, he claimed that the differing ontological stances of researchers cause confusion and complicate the interpretation of research by practising nurses: '...even if they are able to access the evidence, [they] do not quite know what to believe' (p. 314).



## THE WAY FORWARD

What is emerging for me is an understanding that nursing requires an eclectic approach to evidence-based practice that can be conceptualized and operationalized by practitioners. This will help them to function more effectively, offering closely patient-centred evidence-based care (Colyer and Kamath, 1999). Furthermore, the approach needs to be set in a framework that makes sense to practising nurses.

Wolfer (1993) tackled the need for practice-orientated knowledge by considering nursing in terms of three different 'aspects of reality'. Based on the work of Wilber (1990), he proposed a 'body, mind and spirit' approach to the consideration of holistic knowledge, which thus determined the appropriate course of inquiry.

*Body* data are sensory-based and of a material nature, thus its methods of inquiry are objective. This type of knowledge may be regarded as value-free. *Mind* data are mental or symbolic and requires the use of language to describe it. Because it is of a subjective, interpretive nature, it requires qualitative methods of inquiry. In order to make sense of the phenomenon under study, it must be interpreted within an appropriate context. Thus, this type of knowledge is strongly value-orientated. *Spirit* data are based on noncognitive experiences and can only be validated through experiential confirmation. They are based upon feelings about what is valuable and right for people needing nursing care.

Based upon the *aspects of reality*, Wolfer proposed a new paradigm with three strands of knowledge attainment (after Wilber, 1990), which are valid for all three levels. The *instrumental* strand tells the investigator what must be done, and there is a set of rules that must be followed to arrive at 'truth'. The *illuminative* strand refers to what is experientially known, when valid methods of inquiry have been followed. The *communal* strand is public confirmation of 'truth' through a community of experts who arrive at consensual agreement.

*Recognition that there are different and systematic ways of knowing (methods and principles) for different aspects of reality which lead to publicly validated theories or knowledge or direct experience of the phenomena in a given realm is consistent with the full spectrum of human experience.*

Wolfer (1993, p. 145)

This is congruent with holistic nursing care, because to be able to deliver holistic care, one must know about the whole spectrum of a patient's reality. The *body, mind and spirit* are aspects that nurses can readily identify with, and might be one way forward in terms of considering the best evidence for individual patients.

Considering nursing knowledge through these three aspects could help assure that the philosophy of holistic care is captured in nursing's scientific quest for knowledge. Indeed, Rolfe (1996, p. 13) stated that it is a 'failure of the traditional scientific paradigm to account for and describe individual, interpersonal relationships and a holistic view of the person' that has contributed to the theory-practice gap. As contemporary evidence-based practice is based on the traditional scientific paradigm, there is a danger that rather than helping to close the theory-practice gap, it may in fact contribute to it. Many authors are now beginning to question the appropriateness of evidence-based practice for nursing (Upton, 1999; McLaren and Ross, 2000).

What becomes clear – because it will help practising nurses to locate the relevant evidence – is that nursing should be explicit about the different domains of knowledge it employs. *Body, mind and spirit* (Wolfer, 1993) and *case, patient and person* (Liaschenko and Fisher, 1999) are two examples of ways of knowing that could help nurses to identify the evidence that informs their practice. Others have used Carper's (1978) patterns of knowing – *empirics, aesthetics, ethics and personal knowing* – through reflection to examine the knowledge embedded in practice (Johns, 1995). Rolfe (1998, p. 221) offered an expanded typology of knowledge based on the 'knowing that' (theoretical knowledge) and 'knowing how' (practical knowledge) terminology of the philosopher Gilbert Ryle (Ryle, 1963). He described six forms of knowing based on a matrix of Ryle's terms against *scientific, experiential and personal* knowledge.

Whichever framework is used, or whether one is used at all, evidence-based practice must embrace all sources of nursing knowledge as equal and different forms of evidence. Secondly, all types of knowledge need to be placed within the formulation of clinical judgement and decision-making (Rolfe *et al.*, 2001). These two statements present a challenge for nursing: what is the way forward?

As with knowledge generation, there can be no single encompassing way forward. What is required is an eclectic approach that, in combination, meets the needs of the twin objectives, above. And, what is important in my view is that knowledge has utility, i.e. that not only is it derived from practice, but it is also applied to practice. Thus, knowledge itself takes on a dynamic life, where it is constantly being modified and adjusted in response to a particular situation. In this context, knowledge that exists in isolation has no use for nursing practice: 'what is contestable is the value of nursing research that does not affect treatment and care' (Freshwater and Broughton, 2001, p. 60).

Whereas knowledge has traditionally been generated by 'rigorous' research, *practice* knowledge evolves largely through the process of discovery learning, as described many years ago by Dewey (1938).



**Table 1** A framework for knowledge derivation

	Case	Patient	Person
Scientific knowledge	Usual dose range of morphine 2–10 mg/h <i>Based on experimental research evidence</i>	Sedated patients, although unable to communicate, have related stories of painful experiences whilst in the ICU <i>Based on qualitative research evidence</i>	This person has been in intensive care before and required a higher than normal infusion of morphine <i>Based on empirical observations recorded in nursing/medical notes</i>
Experiential knowledge	I have looked after many ICU patients and some require a lot more analgesia than others <i>Based on personal experience and identified through reflective inquiry</i>	Patients in intensive care heal more quickly if they are pain free <i>Based on documentary analysis of nursing reports and clinical outcome data</i>	This person does not like being in pain and becomes very frightened and anxious <i>Based on information from the family, recorded by others in the nursing notes</i>
Personal knowledge	I broke my leg in a car accident 3 years ago and suffered a lot of pain and discomfort whilst in hospital. I know what it is like to be in pain. I can empathise with my patients <i>Based on personal experience</i>	This patient requires boluses of morphine against a background of 6 mg/h. When in pain he becomes tachycardic <i>Based on personal observation</i>	This person is frightened of hospitals and has a low pain threshold <i>Based on information provided to me by family members</i>

Returning to the *case–patient–person* model (Liaschenko and Fisher, 1999) and utilizing Rolfe's (1998) three types of knowing, a matrix of different sources of knowing could be developed that could help practising nurses to identify the knowledge that relates to a particular context. Furthermore, it could also help identify approaches to knowledge generation. To illustrate this, using a common ICU scenario of a ventilated, sedated patient requiring pain relief, see Table 1.

The way forward, which, for me, embraces *practice* knowledge generation and *practice* knowledge application, is a process known as practice development. Through a process of content analysis (after Walker and Avant, 1995), Unsworth (2000, p. 323) identified four critical attributes of practice development:

- new ways of working which lead to a direct measurable improvement in the care or service to the client;
- changes which occur as a response to a specific client need or problem;
- changes which lead to the development of effective services;
- the maintenance or expansion of business/work.

In her editorial, Manley (2000, p. 161) provides some examples of Unsworth's attributes above, related to critical care nursing:

- individuals developing their practice, for example, from reflections on practice, where new insights developed by others may inform future practice;

- critical care teams addressing issues arising from clinical audit;
- the wider development of critical care skills for the benefit of better continuity of care either organization-wide or across traditional boundaries.

Furthermore, in Garbett and McCormack's (2002) concept analysis of practice development, a fourfold purpose was identified:

- improving patient care;
- transforming the culture and context in which nursing care takes place;
- employing a systematic approach to effect changes in practice;
- facilitating healthcare teams.

It is clear that the focus of practice development is improved patient care, which is achieved through a variety of organizational strategies for managing change. In her evaluation study of six practice development units, Gerrish (2001, p. 113) identified seven successful outcomes: achieving optimum practice, providing a patient-orientated service, disseminating innovative practice, team working, enabling practitioners to develop their full potential, adopting a strategic approach to change and autonomous functioning.

Whilst none of the examples given above explicitly state the need for an underpinning evidence base, it is logically implicit. Thus, as there are several levels, or spheres, of practice development, the nature of knowledge necessary to inform it is variable dependent



upon the particular practice context. However, this process must be supported by a change in nursing education, where the source, equity and utility of nursing knowledge are emphasized. Addressing issues of nurse education is beyond the remit of this paper. Instead, the remainder of this paper will outline the case for the embodiment of practice development as the nursing process for critical care.

Practice development is a continuous process. Its focus is on the nursing care of patients, and its aim is to improve nursing care, and thus the outcome of patients. Practice development starts with a clinical problem or issue and has many parallels to the clinical problem-solving model proposed by Rosenberg and Donald (1995). Initially, the problem, having been identified, is analysed in its fullest detail. This information is then processed in relation to the full range of evidence (embracing all types of knowledge discussed above) in order to make sense of the situation. Having examined the evidence that relates to the issue, a change strategy is developed, which is then tested, through application, in the practice setting. At a later date, both the process and the success of the intended outcomes are critically evaluated. If necessary, another circle of practice development is undertaken in the light of the evaluation. In this way, the process of practice development is little different to that of action research. What is different is that action research is usually a one-off event, whereas practice development is a continuum of working, where there may be several simultaneous practice development 'loops'.

Perhaps one of the dangers of pursuing practice development 'blindly' is that research-generated knowledge assumes subservience. As there are many aspects of nursing practice about which little is 'known', it will always be necessary for primary research to be undertaken. 'Doing' and 'using' research should be accorded equal standing; and there are several ways that nurses can undertake research in a practice setting (Bell and Procter, 1998). Whilst nursing has arguably 'concentrated primarily on equipping nurses to become proficient users of research' rather than to become researchers (Procter, 1997, p. 321), practice development should support all nurses to both 'do' and 'use' research. In my view, this is the ideal approach, although it should not be at the expense of developing career researchers (as noted by Procter (1997)).

It is important that practice development does not fall into the trap of being criticised for its rigour on the basis of its nongeneralizability. It should be made clear from the outset that the purpose of practice development is to develop a specific context; thus, its outcomes are not generalizable. Also, the role of research is different for practice to that of academia (Reed and Procter,

1995); healthcare practitioners need research to give them pragmatic solutions to practice problems (Clarke and Procter, 1999). What is essential is that all types of knowledge – not just research knowledge – required to inform the particular development are considered equally.

The way forward is complex and will require a transformation from the current positivist-rooted evidence-based practice to a new way of thinking and practising which embraces all types of knowledge. This raises many other issues beyond the scope of this paper, such as nursing education. However, by focusing nursing on practice development, where the importance of knowledge is in its translation into meaning for the care of patients, nursing knowledge will acquire a pragmatic value, in which all kinds of knowledge are considered equal in the abstract but will assume different levels of importance and relevance in relation to the particular context. In this way, critical care nursing is no different to any other field of nursing. What is important is the 'bottom line' that the outcome is for the benefit of patients (Fulbrook, 2002).

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## **CHAPTER THREE**

### **RESEARCH, KNOWLEDGE, EVIDENCE AND PRACTICE**



## **Research, Knowledge, Evidence and Practice**

### **Introduction**

Thus far, what I have outlined is my development from practitioner to researcher-practitioner. Knowledge comes in all shapes and forms and there is a danger that strict adherence to a particular paradigm will ensure that data will be missed that could inform the research or practice question. What, for me, is even more disturbing is that due to paradigmatic blindness, the research question itself might not even be identified. In research, the major strengths of a triangulated approach are confirmation and completion (Begley, 1996 cited Fulbrook and Caws, 1999), and there are many arguments in nursing research for the research question to dictate the methodology and methods (Wolfer, 1993). Similarly, in practice, multiple methods may be used to gather information, which can be analysed to inform a particular issue. Unfortunately, in my view, nurse researchers and practitioners are not as open to this viewpoint as they might be. There are several main reasons for this: the political drive to implement evidence-based nursing practice, medical hegemony, and cultural acceptance of the dominant discourse.

The current movement in evidence-based healthcare means that nursing is required to demonstrate the basis for its practice; concurrently there is a strong emphasis on research utilisation within government policy (Department of Health, 2000). However, because nursing exists within a healthcare setting that remains dominated by medicine (which idealises positivist research methodology) there is pressure to conform to traditional research approaches, not only to generate knowledge, but also to value it. The dominant view of the value of experimental research in a hierarchy of evidence, embodied within the construct of systematic review, is most prevalent in medicine (see Egger and Davey Smith, 2001). For example, the Cochrane Collaboration (Cochrane Library, 2002) and the NHS Centre for Reviews and Dissemination (2001) value meta-analysis of randomised controlled trials as the highest level of evidence. Whilst there are many nurses who are challenging the appropriateness of the evidence-based practice (e.g. Colyer and Kamath, 1999; Rolfe, 1999b; French, 2002), arguably nursing has been influenced strongly of late, and has



succumbed somewhat to the pressures of conforming to the model of evidence proposed by the dominant discourses of government and medicine.

This thesis represents the construction of an original contribution to nursing knowledge, based on a series of my critical care publications. What has emerged for me, through a process of reflexive writing, is a clarification of the nature of the knowledge – and therefore its related evidence-base – that is required to inform critical care nursing practice. By reflecting on my experience and publications in the transformation of my role from practitioner to researcher-practitioner I have been able to articulate my learning and the emergence of my understanding. That is, pragmatism is the epistemological foundation of a science of practice.

Pragmatic epistemology is about practical knowledge, which incorporates all forms of knowing. In this context, it is about the utility of knowledge within a practice setting: the value of knowledge *for* practice and the value of knowledge generated *from* practice. In this sense its value is judged on its ability to inform and enable the work of nursing.

Therefore, what becomes important as the determinant value of pragmatic knowledge is not its empirical value within a particular paradigm, but its enabling ability to help nurses to deliver best practice. What pragmatic epistemology proposes is that all forms of knowledge are legitimate, provided they may be applied to practice. This requires a different view of the world: one that accepts all forms of knowledge as equal in abstract. This means accepting that all views are valid interpretations of knowledge. This does not mean that pragmatism falls into the trap of relativism – wherein truth and certainty are an illusion (Rolfe, 1999a) - because of the applied nature of its knowledge. Thus pragmatic epistemology does not reject positivist knowledge (or any other form of knowledge). Rather, it embraces it as one of many sources of knowledge. Ironically, this raises another question: is pragmatic epistemology a paradigmatic argument in itself?

When practitioners are able to shed the constraints of accepting a particular paradigmatic valuing of knowledge I contend that they will feel more comfortable in drawing on a range of legitimate – in pragmatic terms - forms of knowledge. This will



in turn broaden the perspective of nurses, increase the evidence-base of nursing, and in my view improve practice. One way that nurses perpetuate the dominant view of knowledge is by continuing to subscribe to its methods both in the literature and in practice. Writers in the nursing profession can lead the way by challenging the dominant discourse and broadening understanding of evidence through publications that emphasise the equitable value of the non-traditional, non-written types of knowledge; that nurses use in their everyday practice. Much as I am doing in this thesis.

This pragmatic view of knowledge does not mean that methodological rigour should be rejected; on the contrary. Each form of knowledge brings with it a range of methodologies and methods (or in more pragmatic terms, approaches that enable understanding) that are suitable for generating it. Rigour should be applied in an appropriate scholarly manner, according to the chosen approach. And, as stated in Chapter One, it is not appropriate to judge a particular approach using the criteria from another. What would be inappropriate is for the pragmatist to reject a particular type of knowledge simply on the basis of paradigmatic valuing. It is important to note however, that although some methods of knowledge generation and application, such as reflexivity, do not 'fit' with traditional paradigms, this does not mean that they do not require their own stringent estimations of rigour. So, to reiterate, the *value* of knowledge is judged according to its ability to inform practice. What then also emerges is an understanding that, as demonstrated by my own body of publications, there is no single form of knowledge that alone is able to inform a particular issue of practice. Pragmatic epistemology requires an holistic, integrated application of knowledge so that the whole picture may be understood.

Using narrative discourse I have formed my own understanding of knowledge and evidence for critical care nursing practice by working on four levels, as noted in Chapter One: personal experience; theoretical understanding of epistemology; application of knowledge to practice; and different representations of knowledge. My publications are a commentary on my own development as a researcher-practitioner and demonstrate the progression of my understanding of knowledge and evidence.



Critical care nursing requires an advanced level of both technical and human expertise. For example, a nurse caring for a multi-trauma victim must draw on an extensive scientific knowledge base, which ranges from physiology and pharmacology through to psychology and sociology in order to be able to deliver care that meets the needs of both the patient and his family. Thus, by its very nature, the knowledge that informs practice must be drawn from many sources (Carper, 1978; Benner, 1984).

For example, the type of knowledge I have generated related to temperature measurement (Fulbrook 1993; 1997) is at the 'hard' end of science whereas a very different sort of knowledge was generated using a phenomenological approach (Todres, Fulbrook & Albarran, 2000) (itself a commentary on my own development). Yet both are equally important in fully meeting the needs of the critically ill patient.

This chapter provides the reader with a summary of my contribution to critical care nursing and the wider implications of this to nursing knowledge, research and practice. This is followed by a more detailed discussion about evidence-based practice and its relevance to the critical care setting. Finally I will make recommendations for a pragmatic way forward and comment on my own development and original contribution to knowledge.

### Contribution to Critical Care Nursing Knowledge

My experience, initially as a practitioner, then as a practitioner-researcher, and finally as a researcher-practitioner, has been instrumental in shaping my current understanding of pragmatic epistemology. I have been researching and publishing in the field of critical care nursing for eleven years. Additionally, my publication activity has contributed substantially to my national and international standing in the field. This standing has arguably contributed to my positional power as a recognised leader in critical care nursing, which has enabled me to 'give voice' to my understanding of knowledge and evidence for nursing practice. (This raises the issue of knowledge and power, as discussed in Chapter One, and forces me to pose the questions to myself: is my positional power as a leader in itself a form of dominance? And, have I contributed to maintenance of the dominant discourse? The answer to both, to some



extent, has to be yes. However, I take heart in the fact that, as opposed to maintaining a dogmatic view, I have been open to new understandings of knowledge for practice, which are informed by a vision of nursing practice that focuses on patient care. Thus my value base relates to human caring [as opposed to paradigmatic dogma].)

During this time I have expanded the knowledge base of critical care in several different areas, utilising several different methodologies. My range of publications is extensive and the majority of papers have been published in peer-reviewed journals of international standing. I have published research papers, review papers and methodology papers. Six of the publications within my body of work were entered for Research Assessment Exercise 2000 and an additional four were submitted for the 1996 Research Assessment Exercise, when I was at University of Portsmouth. In all I have twenty-eight publications that are specific to critical care nursing and a further five that are relevant, which form my body of work. The core of my publications is in peer-reviewed journals. I have also included some minor publications in support of my view of pragmatic epistemology, such as a letter (Palmer *et al.*, 1994) or commentary (Fulbrook, 1999), which evidence my wider contribution to knowledge.

In presenting the publications that represent my contribution to the body of critical care nursing knowledge I am also offering a critique of my work and the methodological approaches I have taken. I have located this critique in the context of nursing and my position on my own practitioner-researcher-practitioner continuum at the points in time of my publications. Whilst some of my earlier work might be criticised *today* as being out-of-date, it was a new contribution to knowledge at the time it was disseminated. As such, it would be inappropriate to judge the value of historical knowledge in the light of the modern position of nursing and what is known today. However, it is appropriate for me to reflect critically on my own work in relation to my subsequent learning as a researcher-practitioner. Furthermore, pragmatic epistemology is also about building upon foundations of knowledge and promoting a continuing 'conversation' about the value of knowledge for practice. So, whilst some aspects of my earlier work may *now* be considered 'outdated', they were an important contribution to the dynamic process of developing knowledge. Other aspects might be located outside this temporal framework. For example,



understanding about aspects of nursing knowledge such as cultural transference in a professional context.

My body of work demonstrates the value of employing a variety of different approaches to knowledge generation within the critical care setting. Furthermore, knowledge only has power i.e. the power to change practice, if it is widely disseminated. My work has been cited widely through publications in peer-reviewed journals of national and international status (see examples in Appendix 3) and I have also presented it at many major national and international conferences (see Appendix 4). My publications demonstrate all three 'warrants' of evidence in nursing science proposed by Forbes *et al.*, (1999):

- Validity: the degree to which the researcher follows procedures accepted by the community;
- Corroboration: evidence is open to public scrutiny;
- Scope: the work is sufficient to address the phenomenon of study.

An important point made by Forbes *et al.* is that these warrants are common to all scientific perspectives.

There are five main areas in which I have contributed to the body of critical care nursing knowledge:

- Use of nursing models;
- Temperature measurement;
- Paediatric intensive care;
- Advanced nursing practice;
- Users' experiences of intensive care.

These areas are discussed chronologically, to provide coherence (Vezeau, 1994; Boje, 2001) in terms of my development as a researcher-practitioner.



## *Nursing Models in Critical Care*

My work with Neuman's Systems Model (Neuman, 1982) developed a type of practical knowledge. That is, knowledge that can be used by other critical care nurses to help guide their practice. Although I was not conscious of the level I was working at, at the time, my approach to the development of Neuman's Model was pragmatic and the purpose of publishing my work was also pragmatic. Following publication of my work many UK ICUs adopted my care plans, and I received a huge amount of correspondence in this respect (see examples Appendix 5). What is interesting to note, with the benefit of hindsight, was the 'wholesale' way that many ICUs - unquestioningly it now seems - simply requested copies of the documentation and care plans I developed and adopted them for their own use. This perhaps, is also testament to the perpetuation of the dominance of the received view of wisdom by nurses in practice, at that time. It is perhaps relevant to also note that whilst I received, and replied to, around forty letters and was invited to present my work at several conferences (see Appendix 4) there was relatively little discourse in the formal literature and most of it occurred some time after my publications (see Appendix 3). This is perhaps a historical marker of the confidence of critical care nurses to enter formally into discourse about nursing practice, and an example of how (unknowingly) I may have been a role model for practitioners.

Although some work had been published previously on the use of a nursing model in a London ICU (McClune and Franklin, 1987) the early version of the *Mead Model*, was limited holistically because it was based on Roper, Logan and Tierney's (1980) *Activities of Daily Living* (which was subsequently much improved upon). The application of Neuman's Model was probably the first time that a holistic nursing model, evidenced by the correspondence I received, had been widely adopted in ICUs across the UK. What I believe I achieved, at that time, was to promote the questioning by many critical care nurses of the medically led way they managed nursing care. My work with Neuman's Model promoted *nursing* care that focused care on ICU patients; from their perspective.

The way that I approached nursing models was by working with someone else's theory and applying it to my own practice. At the time I think it was the right move to



develop practice, and although Neuman's Model was developed in the USA there were few examples of its application to intensive care nursing and there were no known examples of its detailed application within general ICU care plans in the USA (Betty Neuman; personal verbal communication, 1990) and my work was cited in a later version of her model (Neuman, 1999). However, there were many critics of nursing models in the seventies and eighties and their criticism was rooted in concerns for the autonomy of nurses (e.g. Christman, 1978; Frissell, 1988). Many nurses, such as Luker (1988) felt that nursing models were a passing craze, stating that they created the illusion that clinical practices had been improved when in fact the delivery of care remained unchanged. As I stated in one of my papers, "whether the knowledge base should be framed in a model for nursing practice is still debated" (Fulbrook, 1992a, p.44).

With the benefit of hindsight, I tend to agree with most of the critics. However, at that point in time there were few nurses who could claim autonomous practice. Nursing has moved on now, and professional autonomy is a reality for many nurses, particularly those in pioneering roles, such as nurse practitioners and consultant nurses. Perhaps nursing models were a passing craze but they were an important phase in nursing development, which enabled nurses to change the focus of care to nursing practice and health.

The issue of passing crazes is one that is pertinent to pause and consider in the context of this thesis, with respect to evidence-based practice, since it is itself a model; established on symbolism rather than scientific evidence (French, 2002). Its symbolism lays in the belief that it is a process that will guide clinical decision-making to improve practice. (Essentially a *pragmatic* view of knowledge!) This has yet to be tested. Furthermore, it is based on the premise that relevant research has already been (or is currently being) undertaken (Hunt, 1997). Its symbolism has been established through powerful politics: government policy supported by an equally powerful medical view of evidence (see discussion below). It positions certain types of knowledge above others and although claims are made about the value of all types of knowledge in clinical decision-making (e.g. Sackett *et al.*, 1996) the reality, in terms of resources used to fund the generation of knowledge and the application of knowledge embedded within, for example clinical protocols, is contradictory.



Recently more professional doctorates in nursing have been developed (e.g. Ingleton *et al.*, 2001) that take practice as their central focus (Starck *et al.*, 1993). By focusing on clinical practice their pragmatic aim – through the doctoral work of practitioners - is to make a *real* difference to the *real* world of patients. The changing face of the doctoral thesis in nursing marks a movement away from traditional research knowledge.

The imposition of external values on the knowledge base of nursing practice may lead nurses to practice in the misguided belief that only ‘scientific’ research-based knowledge may be used to inform clinical decision-making. Will evidence-based practice survive the test of time, or is it (like nursing models) just another passing craze? Its sustainability will be judged on its ability to deliver its promise: improved care and outcome for patients. In considering the relevance of evidence-based practice to clinical nursing Rolfe (1999b p.440) suggests that every nurse should ask herself the following question:

“Faced with a clinical situation in which the external evidence of a RCT clearly and unequivocally indicates that intervention A produces the best outcome for the ‘average patient’, but where my clinical experience and knowledge of patient P suggests intervention B; which should I choose?”

This question illustrates the dilemma of clinical decision-making that nurses face every day (see my example below, p.328). Yet, according to the contemporary doctrine of evidence-based practice with its hierarchical modelling of evidence, the nurse would be best advised to use intervention A. This *might* turn out to be the better way, but this can only be established after the fact. In any one case there is no certain way of *knowing* in advance that one intervention is better than another. Yet evidence-based practice is based on an estimation of generalised predictability; which is flawed when applied to individuals. It resides within the domain of each nurse to make a clinical decision based on her own estimation of probability after she has weighed up all the evidence available to her, including her particular knowledge of her patient. When focussing on an individual patient it would be unethical for her hand to be



forced by an external valuing of knowledge that means she unquestioningly bases her decision in a hierarchical model, such as that proposed by Evans (2003). What would also be unethical would be for her to reject any particular representation of knowledge, since in pragmatic terms all are equally valid forms. What is essential however is that she critically evaluates the evidence available to her, and makes a decision based on her considered value of it for this particular situation.

### *Temperature Measurement*

My temperature research was of an experimental nature. In the first study, I found that although rectal temperature was slightly more accurate, it was only marginally better than axillary temperature, which was accurate within +/- 0.2°C of true core body temperature – a clinically acceptable range. The study concluded that “both the rectum and the axilla are highly accurate sites for the estimation of core body temperature” (p. 224) and that their consistency prevailed over a variety of potentially confounding variables such as age and gender. As a direct result of the wide dissemination of my findings, critical care nurses began to question their practice and many ICUs throughout the UK, evidenced in letters to me and anecdotally at conferences I presented at, stopped using rectal probes to measure temperature and replaced them with axillary measurements. Furthermore, my work on temperature measurement subsequently became adopted within principles and guidelines for nursing practice (e.g. Bartlett, 1996; Edwards, 1997a, 1997b).

My second temperature study built on the first and used a larger sample size. Based on feedback from one of my medical colleagues, I developed a more robust process for statistical analysis of the data. It proved to be an effective strategy for clarifying the clinical validity of measuring instruments. This study demonstrated that although there were no statistical differences (*t*-test) between the two new temperature-measuring instruments (axillary and aural) and the gold standard of pulmonary artery temperature, and there was a moderate correlation (Pearson’s product moment correlation), the range of difference (limits of agreement) was clinically unacceptable. Anecdotal evidence from critical care colleagues suggests that my published findings again influenced critical care nurses to consider making changes to their nursing practice. Many units questioned the use of the newer temperature measuring



instruments evaluated in my study, and reverted back to mercury thermometers whilst awaiting further evidence of their efficacy. Formal evidence of the influence of my work on temperature measurement is provided in Appendix 3, and my publications continue to be cited internationally (e.g. Marin-Fernandez *et al.*, 1999; Chang *et al.*, 2000; Cronin and Wallis, 2000; Gray, 2002; Holtzclaw, 2003). This second study is also included in the Cochrane Register of Controlled Trials (Cochrane Library, 2003).

The two temperature studies were as rigorous as they could have been – within the boundaries of my developing understanding, as a practitioner-researcher, of the research process - for research studies conducted within the clinical setting. However, the importance of sample size should not be underestimated in experimental research. Both studies, although multiple measurements were made, were of relatively small size subject samples. I did recognise the need to improve my sampling strategy in the second study, undertaking power analysis in advance to determine the minimal sample size. Both samples were also convenience samples because of the relatively small numbers of patients requiring the specific intervention of pulmonary artery catheterisation (randomisation would have taken much longer). Had the sample size been both larger and randomised, the studies may have yielded different results, which would have had more validity in terms of their generalisability to a wider critical care population. What is interesting to note, is that despite the limitations identified above, my work continues to impact on practice. Perhaps this speaks to the pragmatic resonance of my work and its meaning for practice.

Another relevant issue concerning research in the clinical setting is the lack of control. In both studies, because measurements were made during full twenty-four hour days (for up to three months in the first study) many nurses were responsible for recording temperatures. Although operational procedures were developed for each study, and specific training was given, it is not possible to state with 100% certainty that there was no measurement error. “The advantage of the nurse researcher taking all the measurements herself is that she is sure, and can therefore state, that a uniform technique was used on every occasion” (Fulbrook 2000 p.348).



## *Paediatric Intensive Care*

The survey I undertook of paediatric admissions to general adult intensive care units provided knowledge that informed national policy. The study concluded that the number of admissions to adult units had been under-estimated in the BPA report (BPA 1993) and identified a trend to employ more sick children's nurses.

Only a small percentage of intensive care units admitted children, and in only 8.9% of the units did paediatric admissions represent greater than 10% of the patient population. Over 20% of units admitted no children at all and of those units that did admit children the mean admission rate was fourteen children per year. Around 45% of admissions were in the under-four age group.

As a direct consequence of my paediatric intensive care publications I was invited by the Department of Health to contribute to its Chief Nursing Officer's working group on staffing of paediatric intensive care. I played a significant role in the working party; being the sole representative of critical care nurses working in *adult* intensive care units (see NHS Executive 1997a, Annex B). In 1997 our Department of Health *Task Force* published *A Bridge to the Future* (NHS Executive, 1997a), which in tandem another document (NHS Executive, 1997b) proposed a radical restructuring of paediatric intensive care. This major reform has since taken place. As a consequence of this work I was also invited to write a commentary (Fulbrook, 1999) on two articles about education for paediatric intensive care (Camsooksai, 1999; Hewitt-Taylor, 1999).

What this work highlighted for me, in my developing role as a researcher-practitioner, was twofold. Firstly, it heightened my awareness of the value of evidence in the wider context of policy decision-making. Secondly, I became much more aware of the importance of active involvement in professional discourse. As the only representative of adult ICU nurses, my views were much harder to establish in this forum than they were for many of the other *paediatric* representatives. Furthermore, my ability to



present a case for the view of adult ICU nurses was limited by the lack of 'scientific' evidence in the field of paediatric intensive care.

Following on from my work at the Department of Health, and the acute awareness it brought to me about the value of quality evidence versus the power of an influential lobbying group, to underpin practice developments; I determined to expose the lack of evidence on outcomes from paediatric intensive care in the UK. I published a review paper on outcomes and their methods of measurement (Fulbrook and Foxcroft, 1999). This related work was also widely disseminated through national and international conference presentations (see Appendix 4).

### *Advanced Nursing Practice*

In terms of my own estimation of the value of my publications that support my beliefs, values and vision of nursing practice, perhaps my greatest achievement has been my contribution to the debate about advanced nursing practice. This is evidenced by several of my publications in this area (Fulbrook, 1995a; Fulbrook, 1995b; Fulbrook, 1996a; Hind *et al.*, 1999), including chapter contributions (Albarran & Fulbrook, 1998; Fulbrook, 1998) to, and co-editorship of, a major nursing text (Rolfe & Fulbrook, 1998), supported by a number of conference presentations (see Appendix 4), organisation of two national symposia, and input to national professional policy. As noted above and below, in pragmatic terms, dissemination and the way I write - are important factors in placing 'knowledge' in the public domain. In order that practitioners consider changes to the way they practice, they must first be exposed to new ideas.

A well-respected colleague and I determined to raise the profile of the issue of advanced practice in the UK. In 1996 we arranged a national symposium on the subject, which was attended by representatives from the UKCC and a wide range of prominent professionals. We inspired nursing colleagues to present their perspectives on advanced practice and in doing so opened further the professional and academic debate. Practitioners, academics, and researchers were all invited to participate on an equal footing.



We capitalised on this event and collaborated with the speakers to publish a major nursing text: *Advanced Nursing Practice* (Rolfe and Fulbrook, 1998). The book was launched at a second national symposium on advanced practice, which we held in 1998. It continues to be influential, as evidenced by a variety of citations in the literature (see Appendix 3). Following this symposium we moved away from the idea of advanced practice, feeling that it was a static concept, which did not truly reflect an advanced practice role. My personal conclusion was that any nurse, at any level, could be engaged in *advancing* practice, therefore it was a dynamic concept that should not be placed in the past tense i.e. *advanced* practice. Doing so suggested that there was an end-point – that somehow one could achieve mastery of nursing. And, since nursing – like dancing or painting - is an art, it is something that can always be improved upon; its dynamic nature means that an end-point can never be reached. However, although I felt that the terminology was inexact, as a researcher-practitioner, I did believe in the concept.

What we did also, through our dialogue on advanced practice, was to promote the concept of the *consultant nurse*. I, and several colleagues who were involved in our symposia were invited to take part in discussions with the UKCC about the way forward (see UKCC, 1996 for evidence of my participation). I believe that one of the direct consequences of our work was that we had an important influence on the establishment of consultant nurses in the profession today.

As a researcher-practitioner I made an active contribution to the national debate about the nature and expectations of advanced nursing practice. Although I was not working alone, the ‘ground up’ approach we took demonstrates the power that researcher-practitioners can have in developing *practice-based*, as opposed to science-based, theory that can help shape policy. This is an empowering approach, which helps to move knowledge and practice forward. Collaboration and dialogue are the basis for this approach, which is in contrast to the ‘ivory tower’ approach of traditional, objective research. The perspective I brought to the debate was grounded in the ‘real world’ of my critical care nursing practice. My understanding was shaped further by the findings of my qualitative research study that examined experienced intensive care nurses’ views on advanced practice (Fulbrook, 1998). The following extract summarises my conclusions (pp.100-101):



“Advanced practitioners have the ability to practise autonomously, and are not bound by the rules of practice that are there to govern others. Because they have a wealth of knowledge and experience, they are able to rationalise and justify their actions, and are not afraid to make decisions based on past experiences rather than acknowledged theory. When advanced practitioners make decisions, they do so having acknowledged all the factors that impinge on a particular situation and having weighed up all the possible consequences of a variety of possible interventions. They tend not to react to a single stimulus, and are more likely to reserve their judgement until they are in full possession of all the facts that relate to the context. They are able to do this because they have a deeper understanding of the situation. Having established the full context of a situation, advanced practitioners are very good at prioritising their interventions. This is enhanced by their ability to predict outcomes, which is further enhanced by their intuitive grasp of the situation.

Advanced practitioners are articulate and skilled in presenting the nursing perspective in any situation. This ability is borne out of their wealth of nursing knowledge and experience, and the fact that the focus of their care is, and always has been, nursing itself.”

This extract clearly identifies the progression of my understanding about knowledge for practice. It identifies a positive move towards the pragmatic valuing of informal theory – in addition to formal theory - and the importance of critically assimilating all forms of knowledge that may inform a practice situation. As detailed in my narrative in Chapter One, it also helped to shape and articulate my understanding of what makes an advanced practitioner. This foundational understanding continues to inform the progress of my current understanding. As a researcher-practitioner, this work also marked a landmark point in my understanding of the contribution of qualitative research to knowledge and evidence: particularly the value of in-depth description to inform nursing practice and, methodologically, to uncover explanatory theory.



Qualitative research has many detractors, with many concerns expressed by positivists about its rigour. In response to such criticisms researchers have responded by concerning themselves with the credibility and trustworthiness of nursing inquiry (Guba and Lincoln, 1989; Koch, 1994). They make the case that what is important in qualitative research is to faithfully represent the views of the informants (or observees) who are the subjects of the research. However, because the researcher is himself a 'research instrument', it is recognised that it is likely that he will exert some influence (however small) upon the data collection and analysis (Strauss, 1987). My position is that as inevitable as it is in practice, so it is in research. Furthermore, I am less concerned now with adherence to traditional estimations of rigour than I am with the pragmatic outcome of 'knowledge': that is, its ability (with *appropriate* and *relevant* estimations of rigour) to make a positive difference to the life world of the patient.

Researchers using interview as a qualitative research method, have been criticised for their glossing over of issues of reliability and validity (Appleton, 1995). When using interview as the method of data collection, as in my research, the generally accepted view is that the researcher should maintain an objective distance from the informants – acting as a neutral medium for the process of inquiry (Polit and Hungler, 1995). However, there is considerable investment of 'self' during an interview (Smith, 1992) and, whilst it is said that interviewers should not influence research by their own value judgements (Holloway and Fulbrook, 2001), it is impossible to remain completely detached from the process. Even positivist researchers make value judgements at the most basic level. For example, their decisions about what to research and what not to research.

The process of 'becoming' a researcher is narrated in more detail in Chapter One. At the time of my advanced practice research I was a relatively naïve qualitative researcher. I followed the received wisdom of the research experts, and achieved a level of detachment from the informants in my research, which I believe limited my own bias. However, in more recent years I have come to challenge this view, believing that if the essence of qualitative research is the achievement of 'truth', from the emic perspective of research participants, than neutral detachment may not always be the best way to achieve this. Mishler (1986) described 'joint construction of



meaning' as an aim of the interview. He also contended that, rather than remaining detached, the interviewer should challenge the view of the interviewee, thus helping him to arrive at his true beliefs. Had I done this in my research it may well have yielded different findings.

What constitutes truth is an interesting question that has been puzzling philosophers for centuries. I have discussed the concept of truth in narrative in Chapter One, and many of the discussion points are equally relevant to the use of interview as a research method. This way of thinking has not yet been fully explored in the literature – perhaps due to the positivist hangover that requires researchers to be objective. In pursuit of narrative truth I am beginning to realise that in order to achieve real understanding through interviewing a dialogue process in which the interviewer plays an active role may be necessary. At one level this may assist the interviewee to develop coherence to his story and enable the plot of his antenarrative (Boje, 2001) to surface. The interrogation of the interviewee's story through an active dialogue between interviewer-interviewee will add vitality to the deconstructive-reconstructive progress of the interview. On another level, I have concerns about the destructive ability of 'rules' (as described by Lyotard, 1984 in Freeman, 2000) to impose limitations on the pursuit of understanding. What is clear to me is that 'objective' truth is a false hope, and that as Rolfe (1999a) states, all interpretations of meaning are correct.

Returning to advanced practice, I believe my publications and role model as a practitioner-researcher influenced a lot of people in the critical care nursing profession and, as noted above, I disseminated my work widely. Furthermore, I believe that writing (and presenting at conference) in a reader friendly manner, which was firmly grounded in my perspective of working as a practitioner, was a positive influence. The language I wrote (spoke) was the language of practitioners. This remains an important consideration for me today. I have learned that it is not just what I write about, but the way that I write it that is an important characteristic that determines the effectiveness of dissemination. This is also relevant in the context of pragmatic epistemology. The way that knowledge is presented is an important factor that determines whether or not it will be read, in the first instance. Written knowledge that is never read will never translate into practice. Therefore it has no pragmatic value.



Directly related to my advanced practice work was my involvement in two publications about the role of intensive care nurses (Hind *et al.*, 1999; Hind *et al.*, 2000). Both papers were about the extended role of nurses. The first specifically concentrated on nurses' role expansion and the second on their views of health care assistants. The two studies were published in major critical care nursing journals, and the findings have also been disseminated at conference.

The first study found considerable support amongst intensive care nurses for expansion of their role. It emphasised that nurses seeking to expand their roles did so on the basis of assessment of patients' needs and not in response to the reduction in junior doctors' hours.

The second study found wide support from doctors and nurses for health care assistants in a critical care setting. The study was able to identify an educational framework for their development, which has since been implemented at NVQ level three. This work has been widely referenced, in particular, by professional bodies, in relation to the staffing of intensive care units e.g. The British Association of Critical Care Nurses' Position Statement on staffing levels (Pilcher and Odell, 2000). As such it has been very effective in informing the continuing debate about developments in practice.

Both of the above studies employed triangulated methods. Triangulation is a specific way in which a research topic is investigated, a process by which the same research problem is examined from different perspectives, through different sources or by different methods. It is used to avoid biases and enhance the credibility and validity of a study (Begley, 1996; Dootson, 1995; Shih, 1998). Triangulation may be used for *confirmation* or *completeness* (Begley, 1996; Shih, 1998). Different types of triangulation exist (Begley, 1996), for example data and method triangulation. Technically it is different to mixed methods, or across-method research; in which researchers employ methods from different paradigms. Both of the studies above employed across-method triangulation, primarily to obtain completeness of data. By using focus groups, interviews and questionnaires a more comprehensive range of



data was obtained. Across-method triangulation means using both quantitative and qualitative methods to answer the research question.

Some purists might reject the validity of the above two studies, on the basis of argument that research should be conducted within a single paradigm, and there are many who are concerned about method *slurring* (Baker *et al.*, 1992; Johnson *et al.*, 2001). However, although the questionnaire enabled the collection of quantitative data, it was still addressing questions of a qualitative nature in that the answers given were subjective. Thus it can also be argued that it is the nature of research question that dictates the paradigm, not the method of data collection.

The way that different types of knowledge are integrated into practice, and the realisation that there are many ways of knowing (Carper, 1978; Benner, 1984; Watson, 1997), as articulated in my narrative in Chapter One, is fundamental to my understanding of pragmatic epistemology. As a researcher-practitioner I realise that I have now moved well beyond the 'received view' of the world to a place of 'constructed' knowledge. This new understanding of knowledge and thus the value and nature of evidence to inform nursing practice is apparent in my more recent publications.

### *Users' Perspectives of Intensive Care*

The final tranche of papers focused on what it is like to be 'on the receiving end' of intensive care. These papers presented moving accounts that had a powerful impact on many critical care nurses' practice. I received several letters, and many nurses sought me out at conferences to tell me how they had improved their practice as a result of reading my papers. I utilised narrative research, with interviewing as the method of data collection: "Interviews provide the opportunity for the subject to construct a narrative of experience" (Crowe, 1998 p.342). Through this process I was able to describe the reality of experience in vivid detail. Many day-to-day practices of nurses were described. However, the power in their telling was in the rich description of what it felt like for the patient or relative. This is important for Frank (2000), who commends:



“. . . serious attention to illness narratives as the basis for clinical understanding and as the foundation for practical ethics”.

(Frank, 2000, p.355).

For example, in the following extract a nurse describes how she found her husband in the accident and emergency department:

“I just looked at the trolley and saw Steve was completely ‘flat’. All I could see was the ECG machine with a flat line on it. I thought he was dead! I pulled up the covers to see if his feet were still pink, and I said, “Is he dead?” They said, “No” – but the machine was showing a flat trace and they said, “Sorry, we should have turned that off.” I’ve never thought about that before but that really frightened me. It was just a simple omission but, you know, I really thought that he was dead.”

**Fulbrook *et al.* (1999c p.140).**

There were many examples like this one that illustrated small details about nursing practice and the effect they have on people. The example also illustrates the power of story telling, or narrative research, since there is much that nurses can learn from it about the way they practice. In three related articles (Fulbrook, 1999a, 1999b, 1999c) I took a different approach to narrative analysis, and invited three professional colleagues to offer their own interpretations of meaning to the narrative in each paper. A range of professionals from nursing, medicine and the clergy provided perspectives. Their responses were grounded in practice- and patient-focused views, which shed new light on the experiences of the storyteller. This process gave the narrative the “serious attention” demanded by Frank (2000), and in my view demonstrates the power of pragmatic epistemology *in action* and, since every reading of a narrative is a deconstruction (Vezeau, 1994; Derrida, 1999) there are many *true* interpretations (Rolfe, 1999a); all of which will be of pragmatic value when deconstructed again by the reader of each publication.

As a researcher-practitioner I learned a lot about the deconstructive-reconstructive process of developing narrative from the antenarrative of the storyteller (Boje, 2001). The way in which a human being tells a story is very different to that of a novelist! A



human story lacks order and plot and sub-plot are often not initially apparent due to the incoherence of the storyteller. And many hours are spent constructing a coherent narrative from the original story.

My ontological, methodological and epistemological understanding of the narrative approach as a way of understanding the world has been critically discussed in Chapter One, and does not need to be rehearsed here. However, in pragmatic terms, a narrative is an account of events, which can be presented as a path to improved knowledge about nursing care (Frid *et al.*, 2000). As such narrative *is* a method of *research* through which nursing knowledge can be organised and communicated, and in which knowledge may be grounded in the reality of practice (Boykin and Schoenhofer, 1991). By using narratives to tell the story of caring in practice, it enables carers to understand the significance of the care they give and achieve a deeper understanding of the patient's experience of illness (Pearson *et al.*, 1997).

Critics of narrative research often have concerns about sample size and generalisability. However, this is not the point of such work: its purpose is to achieve a new or better understanding (Koch, 1998). As noted above, methodological concerns, such as rigour, have been addressed in full in Chapter One and I do not feel the need to justify or defend the approach here. Save to reiterate that the primary goal of narrative is understanding (Vezeau, 1994; Weick, 1995).

Achieving understanding is an aim of phenomenological research. Its analytical methods employ a 'to and fro' process of engagement with the words used by informants to describe the phenomena of human experience. Emic understanding and interpretation in context enable essences of meaning to be uncovered. (The parallel processes used in narrative inquiry are evident.) Hermeneutic research is a way of interpreting human behaviour and it is based on hermeneutic phenomenology. 'Lived experience' is grasped mainly through language, and researchers go beyond the accounts of participants and interpret them. Meaningful understanding and human communication in context are most important in hermeneutic inquiry (Geanellos, 1998; van der Zalm and Bergum, 2000).



By working with a clinical psychologist to interpret the data, we were able to construct new knowledge about what it feels like to be a patient, that had not previously been identified within the critical care literature (Todres *et al.*, 2000). Several important themes emerged which described the struggles and experiences of being an intensive care patient. For example: ‘coming to terms with people and things that know better than me about how I am’; ‘the dilemma of others knowing *how* I am but not *who* I am’; ‘all I was saying was . . . the frustration of not being understood’. These very sensitive areas were only reached because of the phenomenological nature of the study.

In summary, my body of work, which contributes to critical care nursing knowledge, has been generated using a variety of different (but equally valid) approaches. Utilising Liaschenko and Fisher's (1999) *case-patient-person* model (see below, p.296) to classify the *type* of knowledge, with the typologies of *research* and *practice* to classify the *source* of knowledge, as a theoretical framework, Figure 1 illustrates the different domains of knowledge in which I have published.

	PRACTICE	RESEARCH
CASE	1. Nursing models (3 publications) 2. Advanced nursing practice in intensive care (4 publications) 3. Weaning from ventilation (1 publication) 4. Critical care organisations (1 publication)	1. Core body temperature measurement (4 publications) 2. Advanced nursing practice in intensive care (2 publications) 3. Critical care organisations (1 publication) 4. Health Care Support Workers in intensive care (1 publication) 5. Evidence for practice (1 publication)
PATIENT	1. Care of children in intensive care (4 publications)	1. Care of children in intensive care (1 publication)
PERSON	1. Ethical issues in critical care (2 publications)	1. Patient/relatives experience of intensive care (4 publications)

Figure 1: Publications classified according to knowledge type and source

From the examples of my own work given above, it is clear that there can be no one type of evidence that alone can inform critical nursing practice and in many ways



distinguishing between research and practice presents a false dichotomy, which is in contradiction to my view of pragmatic knowledge. The framework presented above is only for the purpose of clarification for the reader: pragmatic epistemology does not distinguish between practice and research. Rather, it represents a dynamic continuum of the deconstruction-reconstruction of knowledge in practice. I have arrived at this point of understanding through a lengthy process of becoming a researcher-practitioner in critical care nursing.

Currently however, many critical care nurses, when considering what kind of knowledge constitutes 'evidence', refer only to experimental research-generated knowledge (e.g. Taylor-Piliae, 1998). (The plausible reasons why this is so are expanded upon elsewhere in this thesis.) My work has utilised experimental, survey, qualitative, narrative and triangulated approaches. Each time a different type of knowledge has been developed. Each time it had a different meaning for practice. Each time it had a different application. By its very nature nursing requires a range of knowledge, or *evidence*, and borrows from many disciplines, yet the current situation in healthcare in the UK is that non-experimental evidence is regarded as low level (Evans and Pearson, 2001).

### Evidence-based Practice

Evidence-based practice has its own narrative. It is an example of a story with plot and sub-plots that are still emerging. The roots of evidence-based practice may be traced back to the Briggs Report (Briggs, 1972), which recommended that nursing be research-based. Its development in the National Health Service is one of the key policy drivers in the government's *new* health service (Department of Health, 1996). Derived from evidence-based medicine – a phrase first coined by Cochrane (1979) – the term evidence-based practice in relation to nursing did not emerge in the literature until much later (e.g. Cullum *et al.*, 1997). Within the mandate for *clinical governance* (Department of Health, 1998) there is an explicit agenda for health care professionals to make better use of existing evidence, which may be used to inform practice.



It may be argued that the introduction of evidence-based practice is more politically motivated than it is science based (Bradshaw, 2000). Indeed, the lack of an epistemological basis for evidence-based nursing is the position adopted by French (2002). Whilst he accepts its practical value, he challenges its viability as a scientific construct, claiming instead that it is a symbolic concept. He makes the distinction between construct and concept as:

“A construct in scientific terms is built upon the basis of the degree to which one or more parameters of the construct can be demonstrated as constant,” whereas “the term concept is taken to mean that there is loose consensus in the way that the symbol is defined or clarified in every day usage.”

(French, 2002, p.252).

On the basis of his extensive literature search, French (p.254) goes on to say that although there is no consensus meaning of the word ‘evidence’ its most common understanding is that of primary research findings. He summarised the variations in the meaning of the term ‘evidence’ as:

- Evidence as truth;
- Evidence as knowledge (including tacit, expert opinion and experiential);
- Evidence as any relevant information that confirms or refutes a belief;
- Evidence as primary research findings;
- Evidence as meta-analyses and systematic reviews.

Pragmatically, no evidence is useful (even tacit knowledge) unless it is made available to practitioners to help assess and develop their practice. However it is characterised, it is my contention that there is often a dearth of evidence available to inform nursing practice and much of what does exist may not be relevant to human caring. One of the reasons for this is that traditionally, nursing has followed the medical model of theory generation, based on positivist philosophy and utilising quantitative methods. More recently, as nursing had begun to develop its own knowledge base, there has been a distinct paradigm shift, which favours interpretive approaches to theory generation,



employing qualitative methodologies such as phenomenology. However, some critics have suggested that as a consequence of this shift, nurse researchers have been guilty of 'throwing the baby out with the bath water,' resulting in a negligent use of quantitative research approaches, warning that in ignoring experimental research nurses run the risk of overlooking some areas of knowledge (Poole and Jones, 1996). For example, due to concerns about the marginalisation of qualitative research, and its classification as 'low level' evidence, there have been calls for nursing to participate in systematic reviews (Evans and Pearson, 2001) and systematic review of qualitative research has now been established (Dixon-Woods and Fitzpatrick, 2001).

Systematic reviews are widely accepted in healthcare as the most reliable way to manage large volume research evidence (Evans, 2001). Whilst systematic reviews do have a place in informing practice, they do not encompass the full range of different types of knowledge that nurses use and typical hierarchies are biased towards positivist-rooted science. Such hierarchies effectively dismiss other forms of knowledge, such as experiential knowledge - for example expert opinion - grading it as 'poor' and placing it at the bottom of the evidence 'ladder' (e.g. Evans, 2003). Pragmatism moves nurses away from traditional hierarchies of evidence but in doing so risks building a new hierarchy that places pragmatic methods such as reflexivity at the top. This is not its purpose. As stated previously, all forms of knowledge are valid and equal in abstract. What pragmatic epistemology does, however, is to give a new *primacy* (as opposed to dominance) to ways of knowing (and their methodologies) that is currently subservient in traditional views. Nevertheless there should be a continuing discourse about pragmatic epistemology wherein its primacy/dominance is constantly deconstructed/reconstructed.

Currently nursing knowledge is derived from three paradigms: positivism; interpretivism; and critical theory. The three world-views co-exist in an uneasy alliance (Copnell, 1998). However, many researchers contend that it is not the philosophical stance of the researcher that is important in nursing research, but the relevance of the research methodology and methods to address the research question (e.g. Burnard and Hannigan, 2000). Indeed, recognition that fundamentally different types of problems require different methods has been helpful in liberating nursing from the early constraint of a positivist straight-jacket (Wolfer, 1993).



The shift to a view of research *or* practice knowledge (or evidence) wherein it is evaluated according to its ability to make a difference to practice is to be commended. This essentially pragmatic view *is* embedded within the rhetoric of evidence-based practice (though I would contend that it is not embedded in the *practice* of evidence-based practice). This is important in the critical care setting, where decision-making is complex (Currey and Worrall-Carter, 2001), where nurses draw upon a broad range of sources of knowledge to inform their decisions (Manias and Street, 2001) and where decision-making is related to critical care nurses' experience (Bucknall, 2000).

Providing clinically effective care for patients is the cornerstone of evidence-based practice (Regan, 1998); evidence may come from a variety of sources. Clinical effectiveness is defined by the Royal College of Nursing (RCN) as, "doing the right thing in the right way for the right patient at the right time (RCN, 1996 p.3). Thus, to provide evidence-based clinically effective care, critical care nurses must draw on a variety of sources. This is the heart of the issue for nursing, which finds itself in something of a 'Catch 22' situation where, on the one hand it recognises and supports the principles of evidence-based practice but on the other hand, much of the evidence it necessarily must refer to, is considered low level. This is confounded by claims that much 'scientific' research is of poor quality, difficult to evaluate, and may not be directly relevant to patient care (Parkin, 1998).

Is evidence-based practice based on pragmatic epistemology? Certainly, all the right attributes are *theoretically* present: a valuing of all types of knowledge; evaluation of best evidence for practice; integration of knowledge; clinical decision-making; and application to individuals. The key question is whether or not the current concept of evidence-based practice, with its roots in positivist science (which does not value all forms of knowledge), has sufficient relevance to the practice of nursing, which embraces cultural, social and spiritual dimensions (Bradshaw, 2000).

Can pragmatic epistemology and evidence-based practice co-exist? The task for nursing as a profession is to both define and defend the nature of knowledge – and thus the nature of the evidence – required to provide clinically effective care. This means that, rather like researchers must look to the research question to establish the



appropriate methodology, nurses must look to the patient-centred practice question to establish the appropriate type of evidence required. In this way, pragmatic epistemology can provide nursing with the theoretical underpinning for a science of practice. Often the practice issue is complex. This means that a range of types of evidence might be required to determine the best way forward. What is important is that it is the *evidence* that carries the weight of authority, rather than that of the doctor, nurse or any other healthcare professional (Clarke, 1999).

There are many typologies of knowledge. However, debates about theoretical, practical, objective and subjective knowledge are not helpful to nurses in their everyday work (Liaschenko and Fisher, 1999). Rather than considering knowledge from an epistemological stance, another way would be to adopt a more pragmatic view and consider knowledge in relation to the type of work that nurses do and the reflexive way in which they practice.

Liaschenko and Fisher (1999) proposed a tri-partite classification of knowledge based upon nursing work: case, patient, and person. Case knowledge is general knowledge about for example, disease processes, therapeutic protocols, and pharmacology. Patient knowledge is knowledge that defines the individual within the health care system for example, an individual's response to therapeutics. Personal knowledge relates to knowledge of the individual as a person. For example, knowledge about his/her social situation or ethical views. This classification is helpful in illustrating the dilemma that nursing has, in locating evidence. It is easy to see how traditional evidence can be obtained to inform case knowledge whereas patient and personal knowledge present a more difficult challenge, because these types of knowledge relate to the individual. Herein lies the problem for nursing. The type of knowledge most highly valued in healthcare is of the case type, whereas the type of knowledge nurses utilise in their practice is patient and person knowledge. For example, in a study of enteral feeding practices of intensive care nurses it was found that the primary source of knowledge was based on information obtained in clinical practice, including discussion with peers (Belknap, *et al.*, 1997).

Movement to a patient (practice) focused valuing of knowledge will give new *primacy* to patient and person knowledge, where currently it does not exist. This in



turn will place greater emphasis on the way nurses judge the value of sources of knowledge and the methods used to access it. For example, practice based research, using methods such as narrative that enable researchers to capture traditionally elusive areas of tacit knowing, would be accorded greater significance.

The essence of nursing is in human caring, and the focus of nursing care is on meeting the needs of individual patients. Nursing care is delivered by practitioners, who by virtue of the type of work they do, individually assess patients and construct a unique plan of care based upon their assessment. Whilst the care plan might be based upon some evidence from the research literature, it is also based on evidence derived from information gathered from the patient and, the more difficult to articulate, personal knowledge, experientially gained from a series of nursing interactions over time. The resulting construct is an amalgamation, or integration, of knowledge from several sources. Thus, when problems are of a human nature, there is no single solution and the nurse must base her complex decision-making on a range of sources.

For example, based upon the early research work of Hayward (1975) and Boore (1978) accepted evidence is that it is beneficial for pre-operative patients to be given information about their operation and what they can expect to feel like post-operatively. The generalisable knowledge is that this reduces post-operative pain and anxiety, and means that pre-operative information giving is a routine nursing practice. This could be described as 'case' knowledge. However, based upon her assessment of an individual patient who is very anxious ('patient' knowledge) and afraid of hospitals ('person' knowledge) a nurse may well decide to override the case knowledge, thereby providing minimal information pre-operatively. Her assessment is that, in this instance, it would be detrimental to the patient i.e. it would cause more anxiety. Another way to describe this process is clinical judgement.

Returning to the definition of evidence-based medicine most commonly cited, it is:

“. . . the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients . . .  
evidence based medicine means integrating individual clinical



expertise with the best available external clinical evidence from systematic research.”

Sackett *et al.* (1996 p.71).

Clearly then, if this definition is applied to the post-operative nursing example given above, all the criteria for evidence-based practice have been met. There are some areas that can be questioned however. It could be argued that the so-called (25 year-old) evidence the nurse used may not be applicable to contemporary practice and it may not be the best available. It resides within the domain of the individual nurse to ensure that her practice is guided by the ‘best available’ and most current evidence. What is important is that the nurse is able to articulate the basis for her decision. This raises a challenge for nurses, who may not have sufficient research knowledge to critically evaluate available evidence. Indeed, in a recent survey of Australian critical care nurses 42% of the sample declared that they were not adequately prepared to evaluate research (Bucknall *et al.*, 2001). Thus, the logical conclusion is that these nurses were inappropriately prepared to apply the findings of research to their practice. In the UK this was endorsed by Bradshaw (2000 p.314) who stated, “There are insufficient nurses equipped to evaluate what evidence is available let alone generate new evidence about the outcomes of practice.” Additionally, he claimed, the differing ontological stances of researchers cause confusion and complicate the interpretation of research by practising nurses: “. . . even if they are able to access the evidence, [they] do not quite know what to believe” (p. 314).

### The Way Forward: Critical Care Nursing Knowledge, Evidence and Practice

What has emerged for me, through my experiential development as a researcher-practitioner, and more recently the construction of my understanding of pragmatic epistemology through narrative and the process of undertaking a doctoral thesis, is comprehension that nursing requires an integrated approach to evidence-based practice that can be conceptualised and operationalised by practitioners. This will help them to function more effectively, offering closely patient-centred evidence-based care (Colyer and Kamath, 1999). Furthermore, the approach needs to be set in a theoretical framework that makes sense to practising nurses: pragmatic epistemology.



Wolfer (1993) tackled the need for practice-orientated knowledge by considering nursing in terms of three different 'aspects of reality'. Based on the work of Wilber (1990) he proposed a 'body, mind and spirit' approach to the consideration of holistic knowledge, which thus determined the appropriate course of inquiry. *Body* data is sensory-based and of a material nature thus its methods of inquiry are objective. This type of knowledge may be regarded as value-free. *Mind* data is mental or symbolic and requires the use of language to describe it. Because it is of a subjective, interpretive nature it requires qualitative methods of inquiry. In order to make sense of the phenomenon under study it must be interpreted within an appropriate context. Thus this type of knowledge is strongly value-orientated. *Spirit* data are based in non-cognitive experiences and can only be validated through experiential confirmation. They are based upon feelings about what is valuable and right for people needing nursing care.

Based upon the *aspects of reality* Wolfer proposed a new paradigm with three strands of knowledge attainment (after Wilber, 1990), which are valid for all three levels. The *instrumental* strand tells the investigator what must be done, and there is a set of rules that must be followed to arrive at 'truth'. The *illuminative* strand refers to what is experientially known, when valid methods of inquiry have been followed. The *communal* strand is public confirmation of 'truth' through a community of experts who arrive at consensual agreement.

“Recognition that there are different and systematic ways of knowing (methods and principles) for different aspects of reality which lead to publicly validated theories or knowledge or direct experience of the phenomena in a given realm is consistent with the full spectrum of human experience.”

Wolfer (1993, p.145)

This is congruent with holistic nursing care, since to be able to deliver holistic care one must know about the whole spectrum of a patient's reality. The *body, mind* and *spirit* are aspects that nurses can identify readily with, and might be one way forward in terms of considering the best evidence for individual patients.



Considering nursing knowledge through these three aspects could help to assure that the philosophy of holistic care is captured in nursing's scientific quest for knowledge. Indeed, Rolfe (1996b p.13) stated that it is a "failure of the traditional scientific paradigm to account for and describe individual, interpersonal relationships and a holistic view of the person" that has contributed to the theory-practice gap. Since contemporary evidence-based practice is based on the traditional scientific paradigm there is a danger that rather than helping to close the theory-practice gap, it may in fact contribute to it. Many authors are now beginning to question the appropriateness of evidence-based practice for nursing (e.g. McLaren and Ross, 2000; Upton, 1999).

As I concluded at the end of Chapter One, for me it does not matter what methodology is used to generate knowledge provided it is used critically and reflexively (and provided it is appropriate to address the pragmatic question). What is important is that it develops knowledge that can be presented as evidence to inform practice. What becomes clear – because it will help practising nurses to locate the relevant evidence - is that nursing should be explicit about the different domains of knowledge it employs.

*Body, mind and spirit* (Wolfer, 1993) or *case, patient and person* (Liaschenko and Fisher, 1999) are two examples of ways of knowing that could help nurses to identify the evidence that informs their practice. Others have used Carper's (1978) patterns of knowing – *empirics, aesthetics, ethics, and personal knowing* – through reflection to examine the knowledge embedded in practice (e.g. Johns, 1995). Rolfe (1998b, p.221) offered an expanded typology of knowledge based on the 'knowing that' (theoretical knowledge) and 'knowing how' (practical knowledge) terminology of the philosopher Gilbert Ryle (Ryle, 1963). He described six forms of knowing based on a matrix of Ryles' terms against *scientific, experiential* and *personal* knowledge.

Whichever framework is used, or whether one is used at all is not important. The purpose of presenting a *theoretical* framework is simply to illustrate an expanded consciousness of the location of knowledge and evidence that focuses on the whole person (Newman, in Marchione 1993). Evidence-based practice, rooted in pragmatic epistemology, embraces all sources of nursing knowledge as equal and different forms of evidence. Secondly, all types of knowledge need to be placed within the



formulation of clinical judgement and decision-making (Rolfe *et al.*, 2001). These two statements present a challenge for nursing: what is the way forward?

As with knowledge generation, there can be no single encompassing way forward. What is required is an integrated approach that, in combination, meets the needs of the twin objectives, above. And, what is important in my view is that knowledge has utility i.e. that not only is it derived from practice, but it is also applied to practice. Thus knowledge itself takes on a dynamic life, where it is constantly being modified and adjusted in response to a particular situation. In this context, knowledge that exists in isolation has no use for nursing practice: “what is contestable is the value of nursing research that does not affect treatment and care” (Freshwater and Broughton, 2001 p.60).

Whereas knowledge has traditionally been generated by ‘rigorous’ research, *practice* knowledge evolves largely through the process of discovery learning, as described many years ago by Dewey (1938).

Returning to the *case-patient-person* model (Liaschenko and Fisher, 1999) and utilising Rolfe’s (1998b) three types of knowing, a matrix of different sources of knowing could be developed that could help practising nurses to locate, identify and articulate the knowledge that relates to a particular context. Furthermore it could also help to identify approaches to knowledge generation. To illustrate this, using a common ICU scenario of a ventilated, sedated patient requiring pain relief, I have used a framework to classify knowledge, identify its location, and suggest methods for generating it (Figure 2).

What Figure 2 illustrates is a broad (but not exclusive) range of sources of knowledge, some of which is unwritten. What it also illustrates is evidence located in practitioners’ observation and expertise and patients’ preferences. As argued by Hewitt-Taylor (2003), in the context of critical care nursing practice, best practice is derived from neither research nor experiential knowledge alone but includes learning about the individual patient. In clarifying popular misconceptions about evidence-based nursing, this view is also supported by DiCenso *et al.* (1998). Indeed, as noted earlier, evidence-based practice requires the practitioner to formulate clinical



judgement, in individual situations based on the best available evidence. In pragmatic terms, *best* evidence means that it has the power to affect positive patient outcomes.

	CASE	PATIENT	PERSON
<b>Scientific knowledge</b>	<p>Usual dose range of morphine 2-10 mg per hour.</p> <ul style="list-style-type: none"> <li>• <i>Based on experimental research evidence.</i></li> </ul>	<p>Sedated patients, although unable to communicate, have related stories of painful experiences whilst in ICU.</p> <ul style="list-style-type: none"> <li>• <i>Based on qualitative research evidence.</i></li> </ul>	<p>This person has been in intensive care before and required a higher than normal infusion of morphine.</p> <ul style="list-style-type: none"> <li>• <i>Based on empirical observations recorded in nursing/medical notes.</i></li> </ul>
<b>Experiential knowledge</b>	<p>I have looked after many ICU patients and some require a lot more analgesia than others.</p> <ul style="list-style-type: none"> <li>• <i>Based on personal experience and identified through reflective inquiry.</i></li> </ul>	<p>Patients in intensive care heal more quickly if they are pain free.</p> <ul style="list-style-type: none"> <li>• <i>Based on documentary analysis of nursing reports and clinical outcome data.</i></li> </ul>	<p>This person does not like being in pain and becomes very frightened and anxious.</p> <ul style="list-style-type: none"> <li>• <i>Based on information from the family, recorded by others in the nursing notes.</i></li> </ul>
<b>Personal knowledge</b>	<p>I broke my leg in a car accident three years ago and suffered a lot of pain and discomfort whilst in hospital. I know what it is like to be in pain. I can empathise with my patients.</p> <ul style="list-style-type: none"> <li>• <i>Based on personal experience.</i></li> </ul>	<p>This patient requires boluses of morphine against a background of 6 mg per hour. When in pain he becomes tachycardic.</p> <ul style="list-style-type: none"> <li>• <i>Based on personal observation.</i></li> </ul>	<p>This person is frightened of hospitals and has a low pain threshold.</p> <ul style="list-style-type: none"> <li>• <i>Based on information provided to me by family members.</i></li> </ul>

Figure 2. A framework for knowledge derivation

### *Practice Development: A Pragmatic Process*

The way forward, which for me, embraces *practice* knowledge generation and *practice* knowledge application is a process known as practice development. Practice development, by its very nature, is a pragmatic process. It is a dynamic, continuous, iterative process. Its focus is on the nursing care of patients and its aim is to improve



nursing care, and thus outcome of patients. Practice development starts with a clinical problem or issue, and has many parallels to the clinical problem-solving model proposed by Rosenberg and Donald (1995). Initially the problem, having been identified, is analysed in its fullest detail. This information is then processed in relation to the full range of evidence (pragmatically embracing all types of knowledge discussed above) in order to make sense of the situation. In this context, evidence-based practice is different to previous ideas about applied nursing research because it is practice driven (French, 1999). Having examined the evidence that relates to the issue a change strategy is developed, which is then tested, through application, in the practice setting. Later both the process and the success of the intended outcomes are critically evaluated. If necessary, another circle of practice development is undertaken in the light of the evaluation.

In pragmatic epistemology, this process continues *ad infinitum*, constantly deconstructing and reconstructing knowledge with respect to its application to practice.

Through a process of content analysis (after Walker and Avant, 1995) Unsworth (2000 p.323) identified four critical attributes of practice development:

- New ways of working which lead to a direct measurable improvement in the care or service to the client,
- Changes which occur as a response to a specific client need or problem,
- Changes which lead to the development of effective services,
- The maintenance or expansion of business/work.

In her editorial Manley (2000b p.161) provides some examples of Unsworth's attributes above, related to critical care nursing:

- Individuals developing their practice, for example from reflections on practice where new insights developed by others may inform future practice,
- Critical care teams addressing issues arising from clinical audit,
- The wider development of critical care skills for the benefit of better continuity of care either organisation-wide or across traditional boundaries.



Furthermore, in Garbett and McCormack's (2002) concept analysis of practice development a four-fold purpose was identified:

- Improving patient care,
- Transforming the culture and context in which nursing care takes place,
- Employing a systematic approach to effect changes in practice,
- Facilitating healthcare teams.

It is clear that the focus of practice development is improved patient care, which is achieved through a variety of organisational strategies for managing change. In her evaluation study of six practice development units Gerrish (2001 p.113) identified seven successful outcomes: achieving optimum practice; providing a patient-orientated service; disseminating innovative practice; team working; enabling practitioners to develop their full potential; adopting a strategic approach to change; and autonomous functioning.

What practice development offers nursing is a pragmatic *process* that enables knowledge to be generated from and applied to practice. This is not a *general* application, but a *specific* one, wherein available knowledge (all forms) is evaluated for a particular purpose in a particular setting. The principles developed from this specific process may be transferable to other settings: theoretical generalisability (Sharp, 1998). Because the focus or goal of practice development is improved nursing practice, which in turn leads to better patient care, it makes sense for practitioners to value equally all forms of knowledge so that it may be used to make improvements. The case for pragmatic epistemology as the basis of a science of practice has already been made above and will not therefore be repeated here. Suffice to say that integral to my view of practice development as a process, pragmatic epistemology is its implicit and explicit underpinning foundation.

Whilst none of the examples given above explicitly state the need for an underpinning evidence-base, it is logically implicit. Thus, since there are several levels, or spheres, of practice development, the nature of knowledge necessary to inform it is variable dependent upon the particular practice context. However, this process must be



supported by a change in nursing education (and philosophy), where the source, equity and utility of nursing knowledge is emphasised. Addressing issues of nurse education is beyond the remit of this thesis. Instead, the remainder of this chapter will outline the case for the embodiment of practice development as the nursing process for critical care.

Perhaps one of the dangers of pursuing practice development (and pragmatic epistemology) 'blindly' is that research-generated knowledge assumes subservience. Since there are many aspects of nursing practice about which little is 'known' it will always be necessary for primary research to be undertaken. 'Doing' and 'using' research should be accorded equal standing; and there are several ways that nurses can undertake research in a practice setting (Bell and Procter, 1998). Whilst nursing has arguably "concentrated primarily on equipping nurses to become proficient users of research" rather than to become researchers (Procter, 1997 p.321), practice development should support all nurses to both 'do' and 'use' research. In my view, this is the ideal approach, although it should not be at the expense of developing career researchers (as noted by Procter, 1997).

It is important that practice development does not fall into the trap of being criticised for its rigour on the basis of its non-generalisability. It should be made clear from the outset that the purpose of practice development is to develop a specific context; thus its outcomes are not generalisable. Also, the role of research is different for practice to that of academia (Reed and Procter, 1995); healthcare practitioners need research to give them pragmatic solutions to practice problems (Clarke and Procter, 1999). What is essential is that all types of knowledge – not just research knowledge - required to inform the particular development are considered equally.

The way forward is complex, and will require a transformation from the current positivist-rooted evidence-based practice to a new way of thinking and practising which embraces all types of knowledge. This raises many other issues beyond the scope of this thesis, such as nursing education. However, by adopting a pragmatic view of knowledge wherein a pragmatic process (practice development) is employed to generate, apply, and evaluate nursing practice the value of knowledge becomes apparent in its translation into meaning for the care of patients. Nursing knowledge



will acquire a pragmatic value, in which all kinds of knowledge are considered equal in the abstract, but will assume different levels of importance and relevance in relation to the particular context of caring. In this way, critical care nursing is no different to any other field of nursing. What is important, is the 'bottom line'; that the outcome is for the benefit of patients (Fulbrook, 2003).

## Conclusion

In this thesis I have engaged in an active process of reflection, using the deconstructive-reconstructive methodology of narrative writing. I have used an extensive range of my critical care related publications as the basis of a body of critical care nursing knowledge on which to focus my doctoral thesis.

I have worked on four different levels within this thesis: my personal experience as a researcher-practitioner; my theoretical understanding of knowledge and how it is generated; the application of knowledge to practice, and how this impacts on the experience of working towards a PhD; and my understanding of representations of knowledge.

Knowledge and evidence are not the same. I might know something but it does not become evidence until it is placed in a domain where others can view it. By examining the knowledge embedded in my experience as a researcher-practitioner and the progression of my understanding of knowledge through writing – both formally and informally for publication, and theoretically within this thesis – I have developed clarity of thought about the nature of evidence for critical care nursing practice. Whereas research methods in critical care have traditionally been largely empirical, my conclusion is that critical care nursing knowledge is drawn from many different sources, and should be applied in an integrated way that enables practitioners to make a positive difference to the life of patients. Knowledge that is not or cannot be applied to practice is therefore of no value. The valuing of practice knowledge brings with it the requirement that all forms of knowledge are considered as equal, in terms of their potential to impact on practice and that nothing should be rejected on paradigmatic grounds. In contemporary healthcare evidence is hierarchically valued and this raises many questions of equity. Where the value of



knowledge becomes unequal is when its application to practice is limited. The corollary of a pragmatic epistemology is that it requires a pragmatic process to make it work. For me, at this point in time, the best available is practice development.

In summary, this thesis represents a construction of work that makes an original contribution to knowledge. The product of my thesis is a theory of pragmatic epistemology as the basis for a science of practice.



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**APPENDIX 1**

**DECLARATION OF OWNERSHIP**



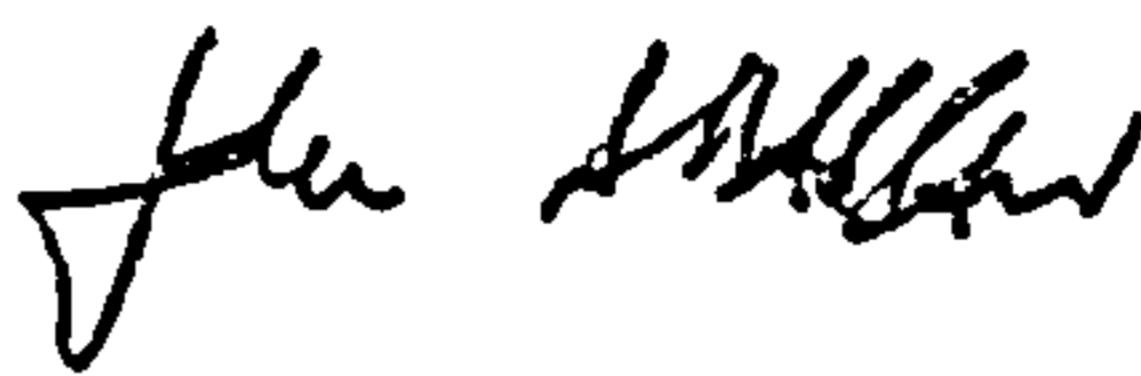
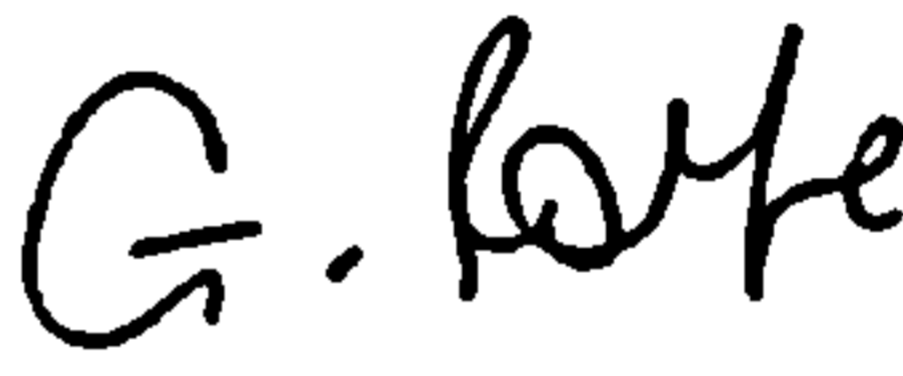
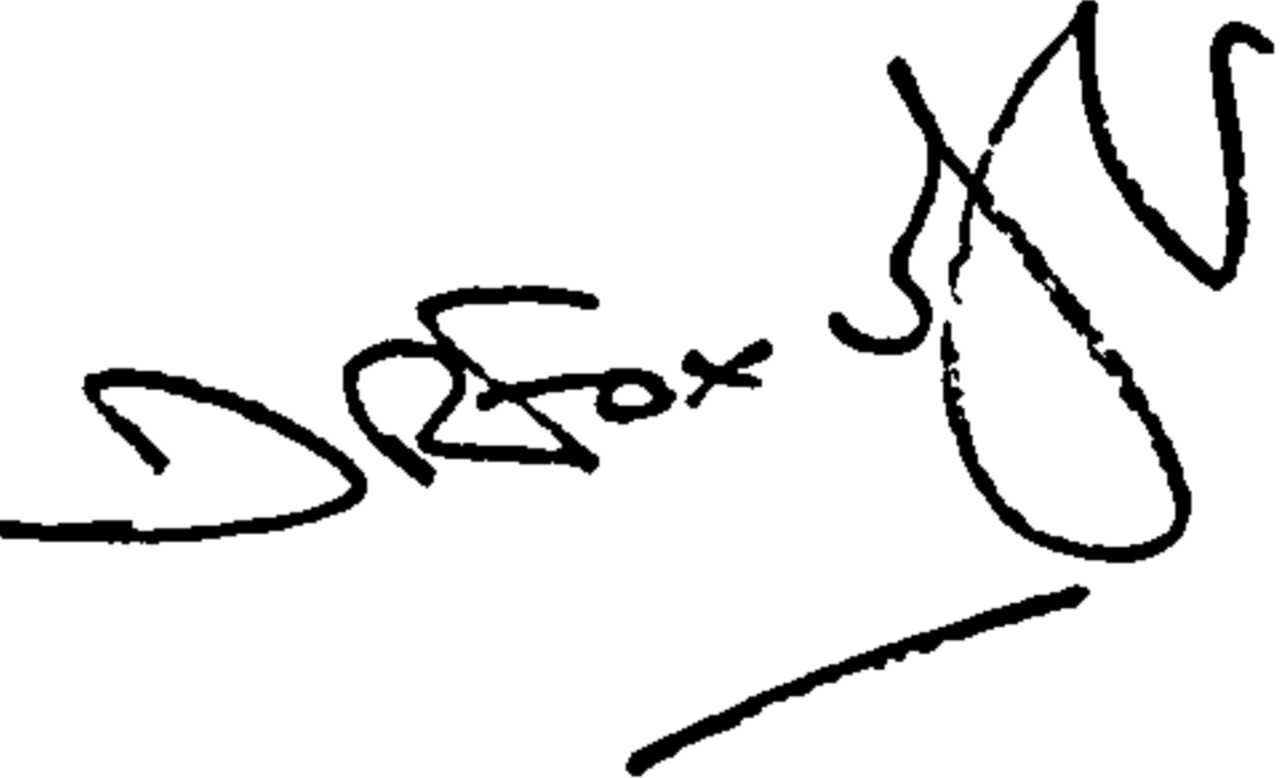
### Body of work submitted for PhD

Reference	Declaration of authorship	Signatures of co-authors (where relevant)
<p><b>Fulbrook PR (1991a).</b> Application of a nursing model to intensive care: planning phase. <u>Care of the Critically Ill</u> 7(2): 76-79.</p>	<p>All my own work</p>	
<p><b>Fulbrook P (1991b).</b> Application of Neuman Systems Model to intensive care. <u>Intensive Care Nursing</u> 7(1): 28-39.</p>	<p>All my own work</p>	
<p><b>Fulbrook P (1992a).</b> Assessing needs and planning actions. <u>Senior Nurse</u> 12(1): 42-44.</p>	<p>All my own work</p>	
<p><b>Fulbrook (1992b).</b> Assessing quality of life: the basis for withdrawal of life support? <u>Journal of Advanced Nursing</u> 17(12): 40-47.</p>	<p>All my own work</p>	
<p><b>Fulbrook P (1993a).</b> Core temperature measurement in adults: a literature review. <u>Journal of Advanced Nursing</u> 18(9): 1451-1460.</p>	<p>All my own work</p>	
<p><b>Fulbrook P (1993b).</b> A comparison of rectal, axillary and pulmonary artery blood temperature in adults. <u>Intensive and Critical Care Nursing</u> 9(4): 217-225.</p>	<p>All my own work</p>	
<p><b>Fulbrook P (1994a).</b> A comparison of temperature measurements. <u>Nursing Times</u> 90(9): 11.</p>	<p>All my own work</p>	



<p>Fulbrook P (1994b). Assessing mental competence in patients and relatives. <u>Journal of Advanced Nursing</u> 20(3): 457-461.</p>	<p>All my own work</p>	
<p>Palmer J, Taylor BL, Smith GB, Fulbrook P (1994). Intensive care for children (letter). <u>British Medical Journal</u> 308: 412.</p>	<p>My contribution was 20%.</p>	<p>1. J Palmer <i>J Palmer</i>  2. B Taylor  3. G Smith <i>Cr</i></p>
<p>Fulbrook P (1995a). Specialist practice: an educational perspective. <u>Nursing in Critical Care</u> September (launch issue): 17-19.</p>	<p>All my own work</p>	
<p>Fulbrook P (1995b). What is advanced practice? <u>Intensive and Critical Care Nursing</u> 11(1): 53.</p>	<p>All my own work</p>	
<p>Fulbrook P (1996a). Advanced practice: Do we know what it is? <u>Nursing in Critical Care</u> 1(1): 9-12.</p>	<p>All my own work</p>	
<p>Fulbrook P (1996b). <u>Physiological Measurement</u>. In: DFS Cormack (Ed), The Research Process in Nursing, 3<sup>rd</sup> edition. Oxford, Blackwell Scientific.</p>	<p>All my own work</p>	
<p>Fulbrook P (1996c). The care of children in adult ICUs: the way forward. <u>Nursing in Critical Care</u> 6(1): 265-267.</p>	<p>All my own work.</p>	
<p>Fulbrook P, Pearce J, Hind M (1996). Paediatric admissions to adult intensive care units: BACCN survey report. <u>Intensive and Critical Care Nursing</u> 12(1): 12-15.</p>	<p>I conducted the survey, analysed the data and wrote the majority of the article. 70% is my own work.</p>	<p>1. J Pearce <i>J Pearce</i>  2. M Hind <i>M Hind</i></p>



<p>Fulbrook P (1997). Core body temperature measurement: a comparison of axilla, tympanic membrane and pulmonary artery blood temperature. <u>Intensive and Critical Care Nursing</u> 13 (5): 266-272.</p>	<p>All my own work</p>	
<p>Albarran J, Fulbrook P (1998). <u>Advanced Practice: An Historical Perspective</u>. In: G Rolfe and P Fulbrook (Eds) <u>Advanced Nursing Practice</u>, pp 11-32. Oxford, Butterworth-Heinemann.</p>	<p>50% my work. I wrote the original paper, which was expanded upon by Albarran</p>	<p>1. J Albarran </p>
<p>Fulbrook P (1998). <u>Advanced Practice: The 'Advanced Practitioner' Perspective</u>. In: G Rolfe and P Fulbrook (eds) <u>Advanced Nursing Practice</u>, pp 87-102. Oxford, Butterworth-Heinemann.</p>	<p>All my own work</p>	
<p>Rolfe G, Fulbrook P (1998) (Eds) <u>Advanced Nursing Practice</u>. 298 pages. Oxford, Butterworth-Heinemann.</p>	<p>This is an edited text in which I have two chapters. In terms of the editorial input I am responsible for 35% of the work.</p>	<p>1. G Rolfe </p>
<p>Fulbrook P, Foxcroft D (1999). Measuring the outcome of paediatric intensive care. <u>Intensive and Critical Care Nursing</u> 15(2): 44-51.</p>	<p>Foxcroft contributed to the section on psychological outcome. 90% of this is my own work.</p>	<p>1. D Foxcroft </p>



<p>Fulbrook P, Allan D, Carroll C, Dawson D (1999a). On the receiving end: experiences of being a relative in critical care. Part 1. <u>Nursing in Critical Care</u> 4(3): 138-145.</p>	<p>I carried out the research and wrote most of the paper. 70% is my own work.</p>	<p>1. D Allen <i>D Allen</i> 2. S. Carroll <i>S. Carroll</i> 3. D Dawson <i>D Dawson</i></p>
<p>Fulbrook P, Buckley P, Mills C, Smith G (1999b). On the receiving end: experiences of being a relative in critical care. Part 2. <u>Nursing in Critical Care</u> 4(4): 179-185.</p>	<p>I carried out the research and wrote most of the paper. 70% is my own work.</p>	<p>1. P Buckley <i>P Buckley</i> 2. C Mills <i>C Mills</i> 3. G Smith <i>G Smith</i></p>
<p>Fulbrook P, Creasey J, Langford D, Manley K (1999c). On the receiving end: experiences of being a relative in critical care. Part 3. <u>Nursing in Critical Care</u> 4(5): 222-230.</p>	<p>I carried out the research and wrote most of the paper. 70% is my own work.</p>	<p>1. J Creasey <i>J Creasey</i> 2. D Langford <i>D Langford</i> 3. K Manley <i>K Manley</i></p>
<p>Hind M, Jackson D, Andrewes C, Fulbrook P, Galvin K, Frost S (1999). Exploring the expanded role of nurses in critical care. <u>Intensive and Critical Care Nursing</u> 15(3): 147-153.</p>	<p>I had a large role in writing this paper. However, I was not one of the researchers. My contribution to this body of work was approximately 10%.</p>	<p>1. M Hind <i>M Hind</i> 2. D Jackson <i>D Jackson</i> 3. C Andrewes <i>C Andrewes</i> 4. K Glavin <i>K Glavin</i> 5. S Frost <i>S Frost</i></p>
<p>Fulbrook P (2000). <u>Physiological Measurement</u>. In: DFS Cormack (Ed), <u>The Research Process in Nursing</u>, 4<sup>th</sup> edition, pp 337-351. Oxford, Blackwell Scientific.</p>	<p>All my own work</p>	
<p>Fulbrook P, Rolfe G, Albarran J, Boxall F (2000). Fit for practice: Project 2000 nurses' views on how well the curriculum prepares them for clinical practice. <u>Nurse Education Today</u> 20(5): 350-357.</p>	<p>I carried out the research and data analysis for this project and co-wrote the paper. Approximately 60% is my work.</p>	<p>1. G Rolfe <i>G Rolfe</i> 2. J Albarran <i>J Albarran</i> 3. F Boxall</p>



<p>Hind M, Jackson D, Andrewes C, Fulbrook P, Galvin K, Frost S (2000). Health care support workers in the critical care setting. <u>Nursing in Critical Care</u> 5(1): 31-39.</p>	<p>I had a major role in writing this paper. However, I was not one of the researchers. My contribution to this body of work was approximately 30%.</p>	<p>1. M Hind 2. D Jackson 3. C Andrewes 4. K Glavin 5. S Frost</p> <p><i>M Hind</i> <i>D Jackson</i> <i>C Andrewes</i> <i>K Glavin</i> <i>S Frost</i></p>
<p>Todres L, Fulbrook P, Albarran J (2000). On the receiving end: a hermeneutic-phenomenological analysis of a patient's struggle to cope while going through intensive care. <u>Nursing in Critical Care</u> 5(4): 277-287.</p>	<p>I undertook the original research, Todres analysed the data, Albarran contributed to the discussion. Approximately 60% is my own work.</p>	<p>1. L Todres 2. J Albarran</p> <p><i>L Todres</i> <i>J Albarran</i></p>
<p>Fulbrook P (2001) (editorial). What in the world are we doing? <u>Critical Times</u> 4(2): 3</p>	<p>All my own work.</p>	
<p>Holloway I, Fulbrook P (2001). Revisiting qualitative inquiry: interviewing in nursing and midwifery research. <u>NT Research</u> 6(1): 539-550.</p>	<p>I wrote the original paper and Holloway developed it further. It represents 50% of my own work.</p>	<p>1. I Holloway</p> <p><i>I Holloway</i></p>
<p>Williams G, Chaboyer W, Thorsteinsdóttir R, Fulbrook P, Shelton C, Chan D, Wojner A (2001). Worldwide overview of critical care nursing organizations and their activities. <u>International Nursing Review</u> 48(4): 208-217.</p>	<p>I collaborated on the questionnaire design and paper. Most work was undertaken by Williams and Chaboyer. My contribution represents 10%.</p>	<p>1. G Williams 2. W Chaboyer 3. R Thorsteinsdottir 4. C Shelton 5. D Chan 6. A Wojner</p> <p><i>G Williams</i> <i>W Chaboyer</i> <i>R Thorsteinsdottir</i> <i>C Shelton</i> <i>D Chan</i> <i>A Wojner</i></p>
<p>Lowe F, Fulbrook P, Aldridge H, Fox S, Gillard J, O'Neill, Papps L (2001). Weaning from ventilation: a nurse-led protocol. <u>Connect: Critical Care Nursing in Europe</u> 1(4): 124-133.</p>	<p>I facilitated the team and co-wrote the paper. My contribution represents 20%.</p>	<p>1. F Lowe 2. H Aldridge 3. J Gillard 4. O'Neill 5. L Papps</p> <p><i>F Lowe</i> <i>H Aldridge</i> <i>J Gillard</i> <i>O'Neill</i> <i>L Papps</i></p>



**APPENDIX 2**  
**PRIMA FACIE**



**Bournemouth University**  
**Postgraduate Research Application/Enrolment Form**  
**Prima facie case for submission – PhD by Publication**

Your name: PAUL FULBROOK

You are required to establish a prima facie case for submission. Your application will be submitted to the Research Degrees Committee for consideration. Please write a summary description (circa 300 words) of the research work and achievements which you consider is equivalent to PhD, and a list of publications to support the case.

Provisional title: The Nature of Knowledge to Inform Critical Care Nursing Practice

I have been researching and publishing in the field of critical care nursing for ten years, which has contributed substantially to my national and international standing in the field. During this time I have expanded the knowledge base of critical care in several different areas, utilising several different methodologies. My range of publications is extensive and the majority of papers have been published in peer reviewed journals of international standing. I have published research papers, review papers and methodology papers. Five of the publications which form my body of work have been entered for this year's RAE (see appendix, footnote 1) and an additional four were submitted for the 1996 Research Assessment Exercise (RAE) when I was at University of Portsmouth (see appendix, footnote 2). In all I have twenty-seven publications that are relevant to critical care nursing, which form my body of work (see appendix).

The development of evidence-based practice in the National Health Service is one of the key policy drivers in the government's *new* health service. Within the mandate for *clinical governance* (Department of Health, 1998) there is a need for health care professionals to make better use of existing evidence which may be used to inform practice. However, there is often a dearth of evidence available and much of what does exist may not be relevant to human caring. One of the reasons for this, is that traditionally, nursing has followed the medical model of theory generation, based on positivist philosophy and utilising quantitative methods. More recently, as nursing had begun to develop its own knowledge base, there has been a distinct paradigm shift, which favours interpretivist approaches to theory generation, employing qualitative methodologies such as phenomenology. However, some critics have suggested that as a consequence of this shift, nurse researchers have been guilty of 'throwing the baby out with the bath water', resulting in a negligent use of quantitative research approaches. In contrast, many researchers also contend that it is not the philosophical stance of the researcher that is important in nursing research, but the relevance of the research methodology and methods to address the research question.

Critical care nursing requires an advanced level of both technical and human expertise. For example, a nurse caring for a multi-trauma victim must draw on an extensive scientific knowledge base, which ranges from physiology and pharmacology through to psychology and sociology in order to be able to deliver care that meets the needs of both the patient and his family. Thus, by its very nature, the knowledge that informs practice must be drawn for many sources. For example, the type of knowledge I have generated related to temperature measurement (Fulbrook 1993; 1997) is at the 'hard' end of science whereas a very different sort of knowledge was generated using a phenomenological approach (Todres, Fulbrook & Albarran, 2000). Yet both are equally important in fully meeting the needs of the critically ill patient.

The aim of my PhD will be to trace the origins and trends of critical care nursing research methodology, utilising my own publications to demonstrate how a variety of approaches may be required to provide the best evidence for developing practice.

**Reference**

Department of Health (1998). *A First Class Service*. London, Department of Health

Signature: 

Date: 06 March 2001



## Appendix

### Publications

- Holloway I, Fulbrook P (2001) Revisiting qualitative inquiry: interviewing in nursing and midwifery research. NT Research 6(1): 539-550.
- Fulbrook P (2000) Physiological Measurement. In: *The Research Process in Nursing*, 4th edition, edited by DFS Cormack. Publisher: Blackwell Scientific, London, chapter 28.
- <sup>1</sup>Todres L, Fulbrook P & Albarran J (2000) On the receiving end: a hermeneutic-phenomenological analysis of a patient's struggle to cope while going through intensive care. Nursing in Critical Care 5(4): 277-287.
- <sup>1</sup>Hind M, Jackson D, Andrewes C, Fulbrook P, Galvin K, Frost S (2000) Health care assistants in the critical care setting. Nursing in Critical Care 5(1) 31-39.
- Fulbrook P, Creasey J, Langford D & Manley K (1999) On the receiving end: experiences of being a relative in critical care. Part 3. Nursing in Critical Care 4(5): 222-230.
- <sup>1</sup>Hind M, Jackson D, Andrewes C, Fulbrook P, Galvin K & Frost S (1999) The expanded role of the intensive care nurse. Intensive & Critical Care Nursing: 15(3): 147-153.
- Fulbrook P (1999). Education for paediatric intensive care (editorial comment). Nursing in Critical Care 4(4): 204.
- Fulbrook P, Buckley P, Mills C & Smith G (1999) On the receiving end: experiences of being a relative in critical care. Part 2. Nursing in Critical Care 4(4): 179-185.
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- <sup>1</sup>Fulbrook P & Foxcroft D (1999) Measuring the outcome of paediatric intensive care. Intensive & Critical Care Nursing 15(2): 44-51.
- Albarran J & Fulbrook P (1998) Advanced Practice: An Historical Perspective. In: G Rolfe & P Fulbrook (eds) *Advanced Nursing Practice*. Oxford, Butterworth-Heinemann.
- Fulbrook P (1998) Advanced Practice: The Nurses' Perspective. In: G Rolfe & P Fulbrook (eds) *Advanced Nursing Practice*. Oxford, Butterworth-Heinemann.
- <sup>1</sup>Fulbrook, P (1997) Core body temperature: a comparison of axilla, tympanic membrane and pulmonary artery blood temperature. Intensive and Critical Care Nursing 13: 266-272.
- Fulbrook, P (1996) The care of children in adult ICUs: the way forward. Nursing in Critical Care 6(1):265-267.
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- <sup>2</sup>Fulbrook P, Pearce J & Hinds M (1996) BACCN survey report: paediatric admissions to general adult intensive care units. Intensive and Critical Care Nursing 12(1):12-15.
- Fulbrook P (1995) Specialist practice: an educational perspective. Nursing in Critical Care September, (launch issue) 17-19.
- Fulbrook P (1995) What is advanced practice? Intensive and Critical Care Nursing 11(1) 53.
- <sup>2</sup>Fulbrook, P (1994) Assessing mental competence in patients and relatives. Journal of Advanced Nursing 20(3), 457-461.
- Fulbrook P (1994) A Comparison of temperature measurements. Nursing Times March 2-8, 90(9), 11.
- Palmer J, Taylor B L, Smith GB & Fulbrook P (1994) Intensive care for children. (Letter) British Medical Journal Feb 5, 308, 412.
- <sup>2</sup>Fulbrook P (1993) A Comparison of rectal, axillary and pulmonary artery blood temperature in adults. Intensive and Critical Care Nursing 9(4), 217-25.
- Fulbrook P (1993) Core temperature measurement in adults: a literature review. Journal of Advanced Nursing 18(9), 1451-60.
- <sup>2</sup>Fulbrook P (1992) Assessing quality of life: the basis for withdrawal of life support? Journal of Advanced Nursing 17(12), 40-7.
- Fulbrook P (1992) Assessing needs and planning actions. Senior Nurse 12(1), 42-4.
- Fulbrook P (1991) Application of a nursing model to intensive care: planning phase. Care of the Critically Ill Mar/Apr 7(2), 76-9.
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<sup>1</sup> Submitted for RAE 2000

<sup>2</sup> Submitted for RAE 1996



**APPENDIX 3**

**CITATIONS**



Reference Containing Citation	Country of Publication
<b>Nursing Models in Critical Care</b>	
Neuman B (1999). The Neuman Systems Model, 3 <sup>rd</sup> edition. New York, Prentice Hall.	USA
Fawcett J (1998) Developments in practice. Care planning: the best tool for the job? <u>Nursing in Critical Care</u> 3(2): 89-97.	UK
Black P, Deeny P, McKenna H (1997) Sensoristtrain: an exploration of nursing interventions in the context of the Neuman systems theory. <u>Intensive and Critical Care Nursing</u> 13(5): 249-258.	UK
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Johnson J (2002). Withdrawal of treatment: a study into the attitudes of ICU nurses. <u>Nurse-2-Nurse</u> 2(11): 11-13.	UK
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Hill Y (1999) Is there a place for parents in the retrieval of critically sick children? <u>Nursing in Critical Care</u> 4(3): 121-127.	UK
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## Temperature Measurement

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Aragon D (1999) Temperature management in trauma patients across the continuum of care: the TEMP group. <u>AACN Clinical Issues: Advanced Practice in Acute and Critical Care</u> 10(1): 113-123.	USA
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Wormald L (1995) Samuel - the boy with tonsillitis. A care study. <u>Intensive and Critical Care Nursing</u> 11(3): 157-160.	UK
MacLeod M (1994) "It's the little things that count": the hidden complexity of everyday clinical nursing practice. <u>Journal of Clinical Nursing</u> 3(6): 361-368.	UK



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Harrison L, Nixon G (2002) Nursing activity in general intensive care. <u>Journal of Clinical Nursing</u> 11(2): 158-167.	UK
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**APPENDIX 4**

**CONFERENCE PRESENTATIONS**



Conference Paper	Country of Presentation
<b>Models in Critical Care Nursing</b>	
<u>Using Models in Critical Care.</u> Dublin Castle Conference Centre, Dublin, Eire. IACCN National Conference. 21 March 1995.	Eire
<u>Using Neuman's Model of Nursing in ITU.</u> 2nd National NDU/ITU study day. Westminster Hospital, 1 <sup>st</sup> December 1992.	UK
<u>Application of the Neuman Systems Model to Intensive Care: Planning and Implementation.</u> BACCN North West Conference. Harrison Hall, Preston. March 1992.	UK
<u>Application of the Neuman Systems Model to Intensive Care.</u> BACCN Education Forum National Conference. Post Graduate Medical Centre, Cardiff. January 1991.	UK
<b>Temperature Measurement in Critical Care</b>	
<u>Core body temperature measurement: a comparison of tympanic membrane and axilla (chemical thermometer) temperatures with pulmonary artery blood temperature.</u> 11 <sup>th</sup> Annual Congress of the European Society of Intensive Care Medicine. Stockholm, Sweden. 7-9 September 1998.	Sweden
<u>Core Temperature Measurement.</u> Bournemouth University Research Conference, 7 <sup>th</sup> October 1993.	UK
<u>Accurate Assessment of Core Body Temperature.</u> BACCN Wessex research meeting. Royal Hampshire County Hospital, Winchester. November 1992.	UK
<u>Rectal, Axillary and Core Temperature Measurement.</u> BACCN National Conference. Owen's Park, University of Manchester. September 1992.	UK
<b>Paediatric Critical Care</b>	
<u>Measuring Outcomes in PICU.</u> Australian and New Zealand Paediatric and Neonatal Intensive Care Conference. Canberra, Australia, October 19 <sup>th</sup> 2000.	Australia
<u>Caring for the Paediatric Patient in the Adult ICU. Cost versus Care.</u> Australian and New Zealand Annual Scientific Meeting on Intensive Care Society. Canberra, Australia, October 19 <sup>th</sup> 2000.	Australia
<u>Children in Adult Intensive Care.</u> Aspects of Critical Care Conference. Jersey Hospital, 15 <sup>th</sup> July 1997.	Channel Islands



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<u>Measuring the Outcomes of Paediatric Intensive Care.</u> 2nd World Congress on Pediatric Intensive Care, Rotterdam, Holland, 24 June 1996.	Holland
<u>Measuring the Outcomes of Paediatric Intensive Care.</u> Advancing Nursing Practice in Paediatric Intensive Care, Conference of the RCN Paediatric Intensive Care Nurses' Forum, Bristol. 17 <sup>th</sup> October 1996.	UK
<u>The Care of Critically Ill Children: A Bridge Too Far?</u> BACCN National Conference. University of Warwick. 2 <sup>nd</sup> September 1997.	UK
<u>Measuring the Outcomes of Paediatric Intensive Care.</u> National Conference of the British Association of Critical Care Nurses, Cardiff. 4 <sup>th</sup> September 1996	UK
<u>Paediatric Intensive Care in the UK.</u> British Association of Critical Care Nurses Wessex Region Conference. Southampton General Hospital, 11 July 1996.	UK

### **Advanced Nursing Practice**

<u>Mastering the Art of Critical Care Nursing</u> (invited keynote address). Critical Care Conference. Oxford Radcliffe Hospital. 16 <sup>th</sup> July 2001.	UK
<u>Health Care Assistants in Critical Care.</u> Australian and New Zealand Annual Scientific Meeting on Intensive Care Society. Canberra, Australia, October 19 <sup>th</sup> -22 <sup>nd</sup> 2000.	Australia
<u>Health Care Assistants in Critical Care</u> British Association of Critical Care Nurses National Conference. Nottingham, September 1999.	UK
<u>Advanced Nursing Practice in Intensive Care.</u> North Yorkshire Critical Care Forum. The University College, Scarborough. 12 <sup>th</sup> June 1998.	UK
<u>Advanced Practice in Intensive Care.</u> European Society of Intensive Care Medicine European Congress. Paris, France 10-12 September 1997.	France
<u>Educating the Advanced Practitioner.</u> 8 <sup>th</sup> Annual Nurse Education Conference. Monash University, Melbourne, Australia. 10 February 1998.	Australia
<u>Advanced Practice: The Way Forward.</u> Invited seminar presentation for the UKCC. UKCC, 23 Portland Place, London, 1 <sup>st</sup> May 1996.	UK
<u>Advanced Practice in Nursing - Does It Exist?</u> Praxis National Conference, Marriott Hotel, Portsmouth, 26 <sup>th</sup> April 1996.	UK
<u>Advanced Practice: An Emic Perspective.</u> Perspectives on Advanced Practice: A National Symposium, University of Portsmouth Management Centre, 20 <sup>th</sup> April 1996.	UK

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Advanced Practice: An Emic Perspective. Developing Professional Roles in Practice: 1<sup>st</sup> Biennial International Nursing & Midwifery Conference, Edinburgh Conference Centre, Heriot-Watt University, Scotland, 11<sup>th</sup> April 1996. UK

Specialist and Advanced Practice. National Conference of the British Association of Critical Care Nurses (BACCN), University of Strathclyde, Glasgow, 20<sup>th</sup> September 1995. UK

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Advanced Practice: Do We Know What It Is? NSPCC National Training Centre, Leicester. BACCN National Study Day: 'Critical Agendas for the Future'. 21<sup>st</sup> April 1995. UK

Advancing Nursing Practice Presented for Oxford Regional Task Force on Senior Doctors' Hours and Reading NHS Trust. Reading. 1<sup>st</sup> March 1995. UK

Advanced Practice and the Advanced practitioner Dundee, Scotland. British Association of Critical Care Nurses, Education Forum. 26 November 1994. UK

UK

### **Evidence-based Practice**

Introduction to Evidence-based Work. 15<sup>th</sup> Annual Congress of the European Society of Intensive Care Medicine. Barcelona, Spain. 1<sup>st</sup> October 2002. Spain

Evidence-based Practice. 15<sup>th</sup> Annual Congress of the European Society of Intensive Care Medicine. Barcelona, Spain. 2<sup>nd</sup> October 2002. Spain

Developing Best Practice in Critical Care. Opening keynote address: Working Together – Achieving More. The First conference of the European Federation of Critical Care Nursing Associations. Paris, France May 26<sup>th</sup>-27<sup>th</sup> 2002. France

Examining the Evidence-base of Critical Care Nursing. (with Lynne Harrison). British Association of Critical Care Nursing International Conference: Global Connections. Edinburgh, Scotland 18<sup>th</sup>-21<sup>st</sup> September, 2000. UK

The Evidence Base of Intensive Care Nursing. Spanish Critical Care Nurses Association Annual Conference. Barcelona, May 25<sup>th</sup> 2000. Spain

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**APPENDIX 5**  
**EXAMPLES OF CORRESPONDENCE**





UNIT GENERAL MANAGER: Dr. R.B.K. BROUGHTON

Your Ref:

Our Ref:

Tel. Ext

Date:

Ask for

Intensive Care Unit.

February 6<sup>th</sup> 1992.

Dear Mr. Fulbrook,

Having read your article 'The Application of the  
Neuman systems model to Intensive Care' published in the  
Intensive Care Nursing, March 1991, I wondered if it would  
be possible please for me to have a copy of your folder  
and care plan?

I work in a very busy 6 bedded ICU, equipped for both  
adults and paediatrics of all specialities, and we are trying  
to introduce the Nursing Process into our Unit as a framework for  
practice, but are having some difficulties with our care plans.

If there is any other help you can offer us, we would be  
very grateful.

Thank you in anticipation,

Yours sincerely,

(Mrs) Ann Williams, RGN. O.N.(and)

When calling please ask for:





Ospideal Cholaiste na hOllscoile Gaillimh.  
UNIVERSITY COLLEGE HOSPITAL, GALWAY, IRELAND.  
Telephone (091) 24222 Fax (091) 26588

SCHOOL OF NURSING  
Ext. : 472

30th January, 1992.

Mr. Paul Fulbrook DPSN RGN,  
3 Hadleigh Gardens,  
Boyatt Wood,  
Eastleigh,  
Hants SO5 4NP.

Dear Mr. Fulbrook,

I am presently assisting the staff of our Intensive Care Unit in their selection of an appropriate Nursing Model in preparation for the implementation of an Intensive Care Course.

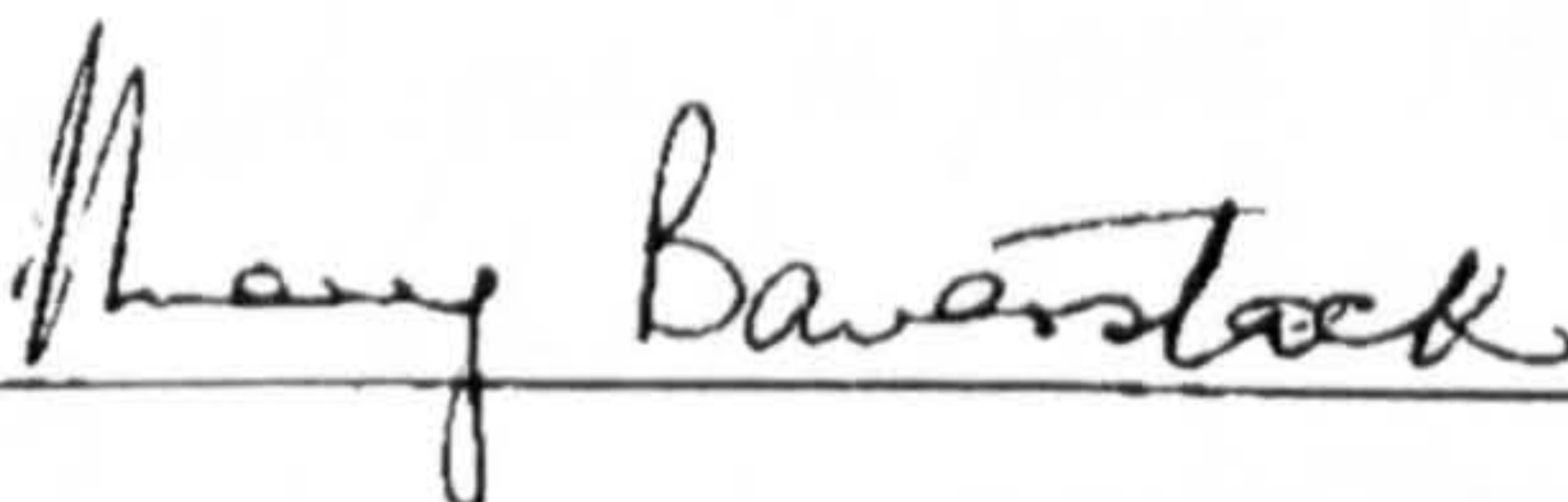
Having read your article "The application of the Neuman systems model to intensive care" published in "Intensive Care Nursing" (1991) 7, 28-39. I was greatly inspired and consequently would very much appreciate a copy of the care plan and folders.

I should also be most grateful if you would send me a copy of the curriculum for your Intensive Care Course.

Please let me know the expense involved and I shall ensure that you are adequately reimbursed.

I look forward to hearing from you.

Yours sincerely,

  
\_\_\_\_\_

Mrs. Mary Baverstock,  
Post-Basic Nurse Tutor.



Sister  
Intensive Care Unit,  
Letterkenny General  
Hospital,  
Letterkenny,  
Co. Donegal,  
Ireland,  
11/3/97.

Paul R Fulbrook  
Course Teacher  
Nursing Registration Dept  
Plymouth School of Nursing  
Mr Fulbrook

Writing regarding your article 'Intensive Care Nursing' (1991) 7, 28-39,  
Nursing Group UK, LTO, 1991, 'The application of the Neuman Systems Model  
to Intensive Care.'

Having been trained in the UK, and worked in the North-West for a number of  
years, I returned to Ireland, to Dublin initially and most recently to the  
above position.

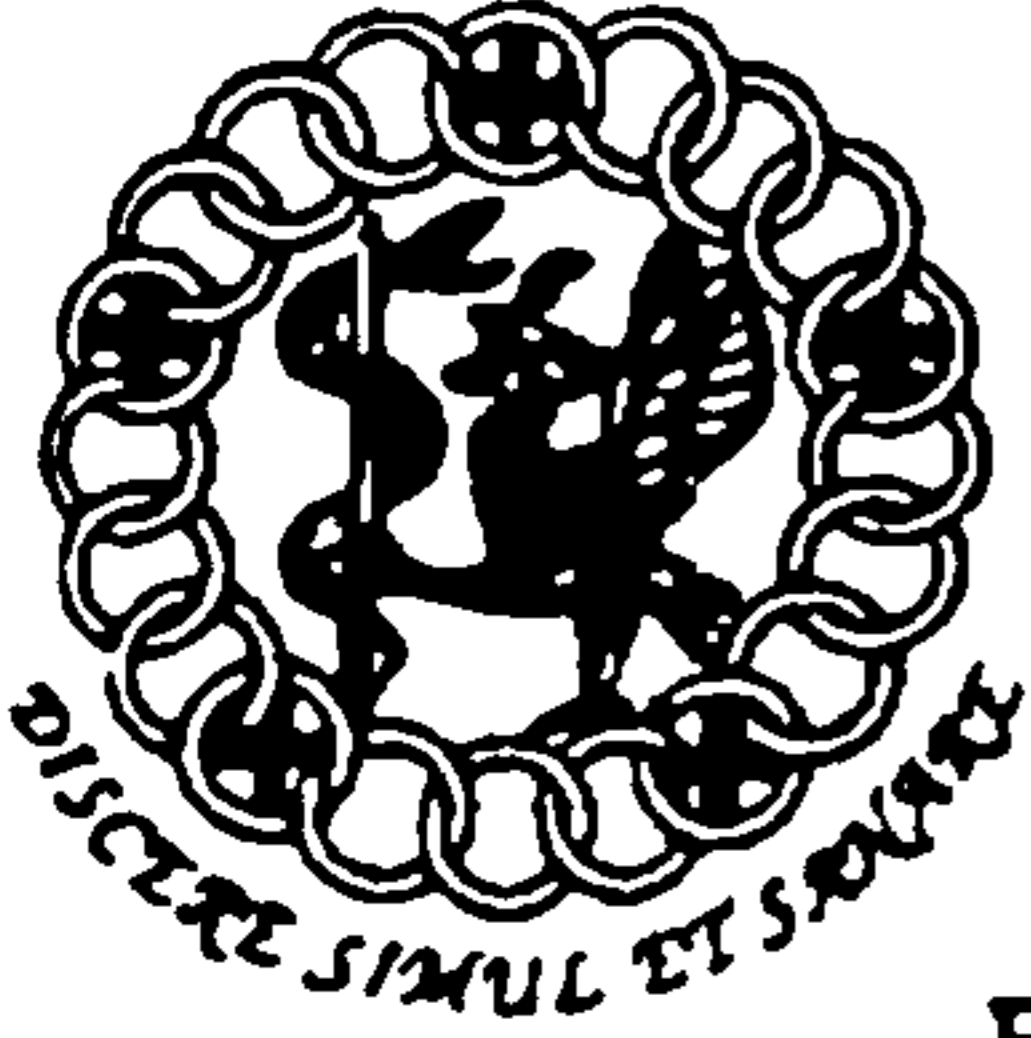
I am interested in the application of a Nursing Model, to facilitate a rationalised  
approach to care provision, within our Unit. Hence I'm taking the  
opportunity of contacting you. I realise time may have altered  
a number of factors, particularly the address details attached to the  
above article.

However should you in fact receive my letter, I would be interested in  
ascertaining whether, the outlined Model is currently in use,  
in the named environment.

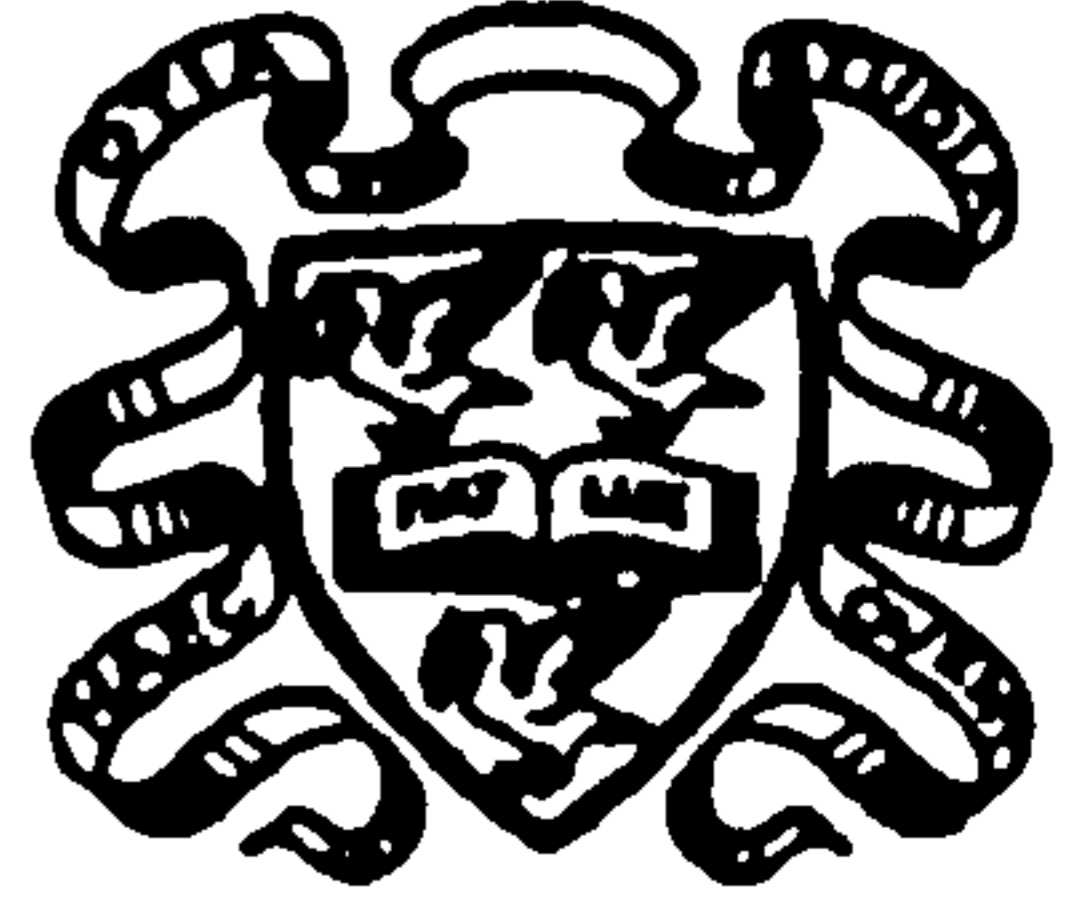
I would greatly appreciate any relevant information you could provide  
and perhaps an opportunity to contact you again if indicated  
at a future date.

Yours faithfully  
Mary Friel (MARY FRIEL) 363





# Royal Liverpool University Hospital



PRESCOT STREET LIVERPOOL L7 8XP TEL: 051-706 2000 FAX: 051-706 5806

Your Ref:

Our Ref:

If telephoning please ask for:

Ext. 2401/2400

11 September 1991

Mr P R Fulbrook  
3 Hadleigh Gardens  
Boyatt Wood  
Eastleigh  
Hants  
SO5 4NP

Dear Mr Fulbrook

Having recently read your article on the application of the Newman Systems model to intensive care in the 'Intensive Care Nursing' journal, I would be most grateful if you would let me have a copy of the care plan and folder, and an off-print of the article.

I am in the process of co-ordinating a working team looking into the topics you have covered. I notice that your manuscript was accepted in December 1990. Have you any further developments since then?

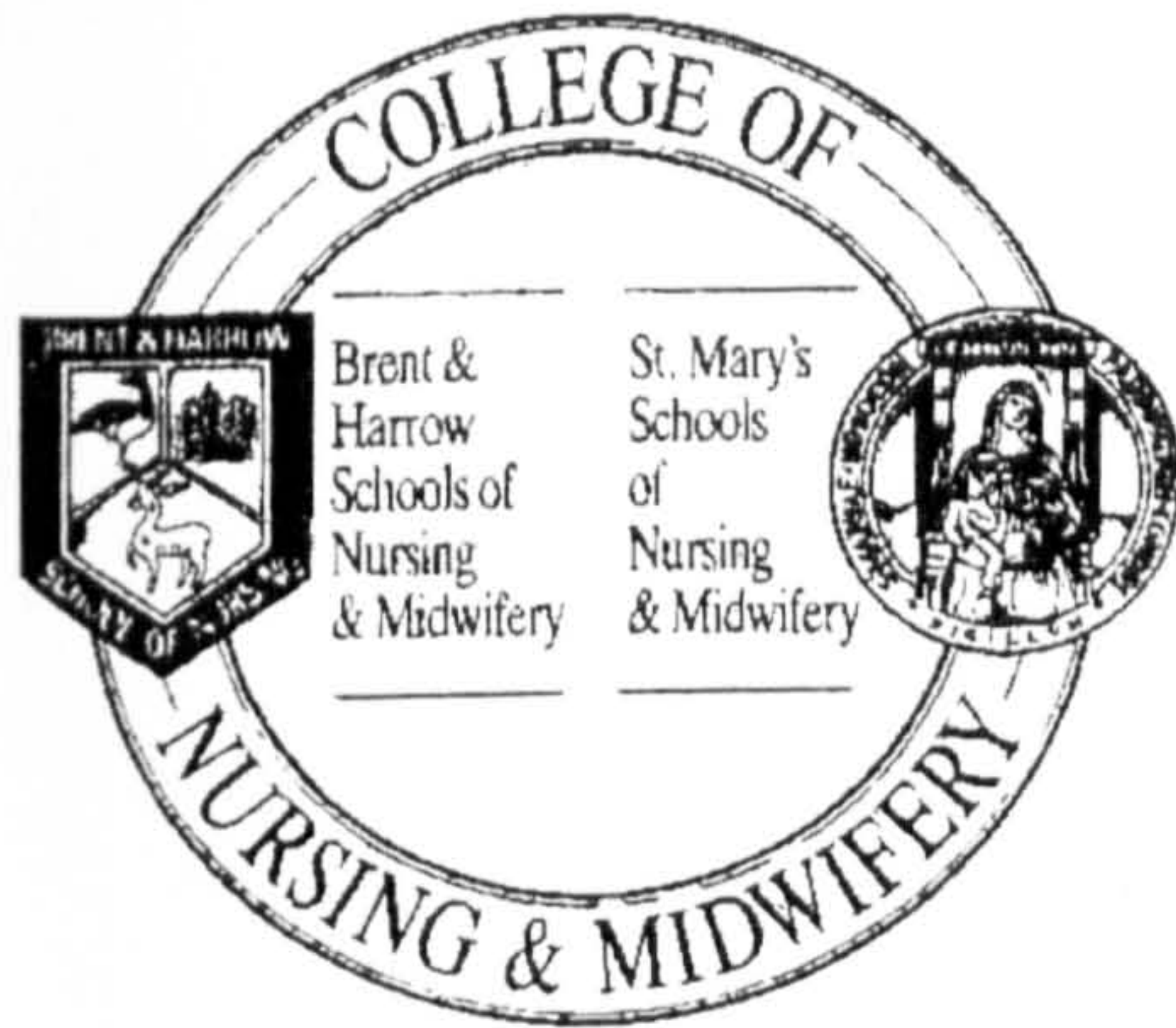
Yours sincerely

Karen Francis

Enc.







PARKSIDE AND HARROW COLLEGE OF NURSING  
FACULTY OF ADVANCED NURSING STUDIES  
ST MARYS HOSPITAL  
PRAED STREET  
LONDON W2 1NY

Mr Paul Fulbrook  
3 Hadleigh Gardens  
Boyatt Wood  
Eastleigh  
Hants SO5 4NP

Dear Mr Fulbrook

I read with interest your paper in the recent addition of the Intensive Care Nursing journal as I have been searching for years for a model that could be adapted effectively to Intensive Care Nursing. At present we are reviewing our current method of nursing documentation and are exploring various models in current use. I would be most grateful if you would send a sample of your care plan and folder as we are interested in achieving a system that can be used and stored easily. Our present system is chaotic to say the least!

I hope the outcome of our endeavours will be as successful as your system appears to be.

Thanking you in anticipation

Yours sincerely

A handwritten signature in cursive script, appearing to read 'Audrey Blenkarn'.

Mrs Audrey Blenkarn  
Course Teacher ENB 100



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**ADDENDUM**



## ADDENDUM

### Pragmatic epistemology

Pragmatism is a philosophy that emphasises the value of statements about the world in terms of their usefulness (Polkinghorne, 2004). Thus, pragmatic epistemology may be described as a theory of knowledge, which places *local* value on knowledge according to its ability to inform (i.e. be applied to) individual practice. Pragmatic theory is integral to knowledge for practice and can facilitate solutions for practice to develop: practice knowledge and importantly practice improvement. In an everyday practice context, the valuing of knowledge is made by the practitioner. Therefore, from the practitioner's point of view, knowledge that cannot be used in (their own) practice is of no value (for them). However, whilst this is a philosophical stance, it raises an important concern in the real world of practice: the ability of practitioners to make sound judgements about what knowledge is valuable and what is not. As Bradshaw (2000) contended, many nurses lack the ability to critically analyse formal evidence. Similarly many may lack the ability to critically analyse informal forms of evidence.

Traditionally, evaluation of knowledge is based on principles of scrutiny and independently observable and verifiable evidence (Davies *et al.*, 2000). However, in the 'moment' of practice, when a nurse makes a clinically-based judgement about a certain course of action it is arguable that s/he will, more often than not, base their decision on experientially derived knowledge (which will inevitably contain verifiable evidence). This raises the contention of the technical-judgement practice controversy (Polkinghorne, 2004).

The technically based side holds that practice should consist of the application of scientifically validated knowledge; the judgement-based side advocates that practice should be comprised of actions informed by situated judgements of practitioners.

(Polkinghorne, 2004 p.3)



However, in proposing a pragmatic theory of knowledge I am not advocating an either/or position. Rather, I am arguing for an 'inclusive science of practice' in which practitioners are able to consider all forms of knowledge in terms of their suitability for application to their own practice. This requires the practitioner to hold a 'creative tension' between formal and informal ways of knowing. Arguably, practitioners are already working this way, although many would not regard informal knowledge as being 'legitimate'.

In essence, a practitioner makes a judgement about the type of knowledge that is useful for a particular situation. This is what Polkinghorne (2004) describes as *situated judgement*. Rarely is only one type of knowledge sufficient to guide practice, and most often a nurse draws on a range of sources of knowledge that s/he applies in a unique way to a particular practice situation. (This is reiterated throughout my thesis). As noted on pages 10 and 16 of my thesis, there are several ways of knowing (e.g. Carper, 1978) and application of knowledge may not be a conscious, rational process (Benner *et al.*, 1999). This is no different to the notion of clinical decision-making. The concern is that practitioners might make experientially-based judgements that are ill-informed, and that the formal recognition of pragmatic knowledge might 'validate' it to the extent that it is placed unquestioned above other forms of knowledge. This is not a view that I support. As soon as any form of knowledge becomes normative, it also runs the risk of becoming oppressive, this includes informal knowledge, and as such all forms of knowing need to be subject to reflexivity. As stated on pages 301, 324, and 326 of my thesis, all forms of knowing are regarded as being equal in abstract. Pragmatic value is given according to its usefulness for a particular practice situation. As with action research, this approach is validity-enhancing (Hope & Waterman, 2003).

Pragmatic epistemology is grounded in practice, and based on the premise that thought and action (in practice) are inseparable. This view is well rehearsed in the literature (e.g. Gibbs, 1988; Usher & Bryant, 1989; Jarvis, 1996; Rolfe, 1996) and is neatly summarised by Polkinghorne (2004, p.5):

“Practice is sometimes differentiated from theory, doing something as opposed to thinking about something. However, the distinction is



overdrawn. Action and thought (both conscious and unconscious) are interactive. Practices are grounded in understandings people have about the world, and these understandings are, in turn, influenced by the effect of their practices on the world. Contemporary practice theory refocuses on the point of interaction of people with the world and others.”

Pragmatic epistemology and the formal-informal continuum of knowledge provide a dialogic space within which all ways of knowing can be integrated (Bohm, 2000).

How a practitioner makes a decision about what to do in a particular clinical situation depends a lot on the individual: his/her assessment of the clinical situation/context, and his/her experience and exposure to different types of knowing. Thus, another important dimension of pragmatic epistemology is access to knowledge. For if practitioners are not exposed (or more importantly do not expose themselves) to new knowledge then they cannot use it for their practice. This places an important onus on theory (knowledge) writers to place their work in media that are accessed easily and widely by the practising masses. This point was emphasised on page 33 of my thesis: for knowledge to be used, it must be accessible.

Practitioners also need the skills of discerning and discriminating different types of evidence and its usefulness, and the skills of critical appraisal to ask how that knowledge/theory was generated. When a practitioner is confronted with a clinical situation s/he is likely to draw on a range of different types of knowledge that help to inform his/her clinical judgement about the most appropriate form of action to take for this particular set of circumstances. The type of knowledge, which is most appropriate to inform practice, cannot always be prescribed in advance, and what might be described as ‘best practice’ in one particular situation may be inappropriate for another that is similar. How a nurse makes a decision about what is best for ‘this’ situation is often dependent on his/her assessment of the unique attributes of the client and their environmental context.



In my view, there are essentially four domains of knowledge that nurses use in their practice. Others such as Marks Maran and Rose (1996) and Carper (1978) have proposed similar views, although within different frameworks.

Within the construct of my understanding of pragmatic epistemology, the first domain may be described as 'formal' knowledge i.e. knowledge that has been generated by others, using the whole spectrum of 'research' methodologies and methods available, which is placed in the public domain. For example, a quantitative or qualitative research article. The remaining three domains may be collectively termed 'informal' knowledge. The second domain, is knowledge drawn from personal experience, which is brought to the clinical situation 'in the moment' through conscious recollection (what Schön (1983) described as reflection-in-action). The third domain, is knowledge drawn from others' experiences, which has been imparted (to the individual) usually in informal settings. Again, this knowledge is brought to the fore consciously 'in the moment'. The fourth domain is less tangible, and was described two decades ago by Benner (1984) as intuition. This domain is not without substance, however. Rather, it is the case that there is an identifiable knowledge base to what the nurse experiences as feelings (what others perhaps, have described as emotional intelligence), however at the moment in time that it is experienced in practice, there is no conscious recognition of it. This does not mean that intuitive knowledge comes from nowhere; its foundation can be accessed through skilled reflection (Harvey *et al.*, 2002), although the act of reflection may need to go very deep before the basis of intuitive thought can be articulated.

Although what Benner (1984) described as 'intuitive grasp' may well be unconscious, it is not unknowable (Rolfe, 1998). Employing qualitative approaches to nursing research, such as phenomenology and narrative inquiry, can help to 'surface' the theory embedded in intuitive actions. Furthermore, using a reflexive approach to nursing practice can enable clinical judgements to be formulated and tested in a conscious and mindful way (Rolfe, 1998). What is important in this context, is that experience must be *actively* processed for it to be converted into knowledge (Andrews, 1996).



A similar view is proposed by Rycroft-Malone *et al.* (2004). In their discussion paper of what counts as evidence-based practice, they draw on the work of Eraut (1985, 2000) who contends that knowledge is categorised into two types: propositional and non-propositional. These terms parallel my use of the terms formal and informal. What is important to acknowledge is that non-propositional (informal) knowledge “has the potential to become propositional knowledge once it has been articulated by individual practitioners . . . and verified through wider communities of practice in the critical social science tradition” (Rycroft-Malone *et al.*, 2004 p.83).

This links to the early debate around nursing process and nurse education, i.e. the dialectic between process and outcome oriented approaches to practice, education and research. It surfaces an old debate in education about essentialist education (which the ‘old’ nursing programmes were) versus process student centred learning (which the ‘new’ programmes are supposed to be). Arguably, some of the problems that exist around the devaluing of informal and practical wisdom are due to the way in which nurses are educated and socialised through training programmes. Ironically, it seems that the move into higher education has somehow reinforced something that nurse educators went into higher education to be absolved of.

Knowledge derived from personal experience has been described previously as professional craft knowledge or practical know-how (Titchen, 2000). A craft has been described as an “embodied, exacting skill . . . To do a craft is . . . to do something that is both practical . . . and creative . . . In craftwork, the practical and creative merge and become indistinguishable” (Frank, 2003, p.251). However, “there is still a concern that such sources of knowledge are idiosyncratic, subject to bias and, as a result, lack credibility” (Rycroft-Malone *et al.* (2004 p.84). However, Rycroft-Malone *et al.* go on to state that they do not support this view. Rather, as I am contending, they suggest that it is required, and enables nurses to integrate different types of knowledge in their practice.

Informal knowledge (practical wisdom) might act as the integrating force that pulls together other aspects of knowledge through dialogue and experience. Eraut (2000) has attempted to clarify the multiple meanings of terms such as ‘non-formal learning’, ‘implicit learning’ and ‘tacit knowledge’ within professional practice. His theoretical



analysis provided three types of tacit knowledge: tacit understandings of people and situations, routinised actions, and tacit rules that underpin intuitive decision-making;

“They come together when professional performance involves sequences of routinised action punctuated by rapid intuitive decisions based on tacit understanding of the situation”.

(Eraut, 2000 p.113)

Importantly, Eraut recognises the application of scientific (formal) knowledge as being a complementary process in practical situations. He described four levels of action:

- To understand the situation may require the use of some prior knowledge.
- Recognition that a concept or idea (theory) is relevant.
- Changing the concept or idea into a form appropriate for the situation.
- Integrating the above knowledge with other knowledge in the planning and implementation of action.

### **Sources of knowledge**

One of the problems that nurses have, when it comes to knowledge for practice, is that the majority of knowledge that nurses use in their practice is not the ‘formal’ type of knowledge described above. This in turn creates further difficulties. The first is that it is very difficult for other nurses to access informal knowledge. The second, by virtue of academic, political and professional agenda and power issues (which I have referred to in the main thesis), is that informal knowledge is treated subserviently to formal knowledge.

This is in direct contradiction to the theory of pragmatic epistemology that I have proposed. Central to my thesis is the proposition that all knowledge is of equal value *in the abstract*. By this, I mean that all types of knowledge are absolved from pre-ordained value placed upon it from an (global) academic, political or professional point of view. However, as soon as it is placed within a context it takes on a value.



The world in which we live is dominated (indeed colonised) by a variety of world views, which have embedded values. Thus it is impossible to place the abstract knowledge within a context that does not 'contaminate' it. Equally, what I am saying is that no one type of knowledge has less or more importance than another. When different types of knowledge assume different values it is because of their relevance for practice. The only person(s) who can make the value judgement about the utility of knowledge for practice, is the person(s) who is intending to use it. They will do this in the context of the way in which they have come to understand the value of knowledge. (Although their ability to do so should not go unquestioned; arguably the more experienced nurse is better equipped to make such judgements). This is the issue I raised above. That is, it is very difficult for an individual nurse to determine which forms of knowledge to sanction in which circumstances. This illustrates the creative tension held by practitioners about the value in knowledge (by others), whilst simultaneously considering the value of knowledge (for practice).

This idea about the individual nature of knowledge (by individual I mean context-dependent) is in direct contrast to traditional views of knowledge that are based on assumptions of generalisability. This is the contradiction, pragmatic knowledge is both individual and dependant upon context, it is related to both the universal and the particular. The problem inherent with hypothetico-deductive reasoning comes not at the theory level, but at the practice level. Theories of generalisability (usually supported by statistics of mathematical probability) are based on assumptions about the 'average' person in the average situation (which is usually constructed artificially for the specific purpose of experimental rigour). Rarely, in practice, do nurses come across average patients in average situations. This is not to say that nurses should not use formal theory in their practice. On the contrary: they should. The critical error is in making the assumption that it is the only form of knowledge that can inform practice. (This applies equally to informal knowledge).

The problem for nursing, is how to challenge the dominant discourse about the hierarchy of knowledge, which is expressed in a variety of ways that socialise nurses into acceptance of the dominant view. For example, the political view of evidence-based practice described by the government in a series of policy documents places 'traditional' experimental research at the top of the hierarchy. This is further



reinforced by approaches to knowledge such as the Cochrane Collaboration that are rather dismissive of informal knowledge. Although it is changing, nursing curricula place more emphasis on students' references to formal knowledge than knowledge learned in practice. Nursing journals – their editorial boards and reviewers populated by academics – help to maintain the dominant discourse. Similarly, other authors, in their enthusiasm to highlight another aspect of the picture, privilege informal knowledge as they do qualitative research, perpetuating further the never ending cycle of exaggerated claims and pendulum swinging.

The challenge for nursing 'science' is to move informal knowledge onto the same footing as formal knowledge. There is no panacea, and a cultural shift is required on a grand scale that involves movement from all parties: academic, political, professional, and individual. One way that this can be achieved is by using reflexive research methods more, such as narrative discourse, that enable informal knowledge to be articulated. This should be disseminated through publications – in journals that value post-modern approaches to knowledge generation – that, importantly, are written in a practical language that is understood by practitioners. Initially, the most important shift to be made is the cultural shift to a conscious awareness of the existence of all types of knowledge.

### **Approaches to knowledge**

The strengths and limitations of different approaches to knowledge generation are discussed in the main thesis. What is important to note, is that each approach brings with it a particular set of rules that determine, in the first instance, how the methodology should be applied i.e. its rules of rigour. This in turn defines the limitations of the particular approach. Whilst each approach has a particular – and appropriate - set of rules that govern its use and application, it would be a critical error to apply the rules of one methodology to a different approach. This is the danger when powerful academics/politicians/professionals favour a particular approach to knowledge generation. They tend to dismiss alternative and/or complementary approaches because they judge them according to the set of rules that guide their favoured approach. We use hierarchies because they are central to the practical,



political and ethical context we currently find ourselves in, but hierarchies are only a partial view and need to be seen as such.

Evidence-based practice occupies a privileged position. Pragmatic epistemology attempts not to dislodge it from this position, but to place different understandings of knowledge (formal and informal) shoulder-to-shoulder within the construct of evidence-based practice.

In nursing, we have struggled with our understanding of the nature of knowledge. From the 'art versus science' debates of the eighties through to the post-modern discourse of the twenty-first century we have tried to make sense of 'what we know' and 'how we know it', and what this means for patients, clients, carers and their families. Arguably, the driving force behind this quest for knowledge is the belief that a deeper understanding empowers us to improve the care of the people we serve. For me, this then determines the value of knowledge. By posing the question: can I use this knowledge to improve my practice, the answer enables me to assign value to it.

There is another question I can ask: what other knowledge is available to me that I can use to improve my practice (in this situation)? There is a range of sources I could consider. For example, see Figure 2 on page 333 on my thesis. Note that I am not asking what *research* is available to me? Of course, I am interested in formal knowledge, but it is not the only type of knowledge that might help me. However, rather like I might choose a particular research method because it best enables me to answer a particular research question, there might be a particular type of knowledge that best enables me to address a practice question.

For example, in my intensive care practice I might be presented with a clinical situation in which it falls to me to inform the parents of a critically ill child that s/he is not expected to survive. What knowledge might I draw upon to help me in this situation? And, how do I decide what is relevant i.e. most valuable?

I might be aware of some research in the literature. It is unlikely that I would find any experimental research (since this would be unethical) that would tell me what the average nurse would do in the average situation, but I might find some research of a



qualitative nature. For example, a phenomenological study of parents (or nurses) who had experienced a similar situation could provide me with valuable insights about how best to handle 'my' situation – but it would not provide rules for 'what must be done'. I may also have experienced a similar situation in my practice. This may have been handled very well by me, or perhaps very badly. By reflecting in the present, on this past experience, I would probably be able to develop further insight (personal knowledge) that would help to guide me in the current situation. Again, it would probably be insufficient to make 'rules' for my practice although, conceivably, I might conclude that there are things 'I would never do that way again'. My sourcing of personal knowledge through conscious reflection 'in action' would contribute to my sense of 'professional self' – which has already been shaped to some extent by my previous similar experience(s) – although this assimilation was probably not a conscious endeavour. Finally, I may have listened to, or observed, other nurses' experiences of similar situations. The knowledge that was embedded in their practice/stories will have contributed to 'what I know now'. The final area of knowing is what I have learned from being in the presence of the parents. For example, my understanding of how they will react to what I have to tell them will be shaped by how I have come to 'know' them over the last few days caring for their child. Situational wisdom or prudence is what is called forth.

How do I decide what to do? Would I normally consciously work through all of the things 'I know' that are relevant to this situation? Probably not (although this might be the case if I was a novice or in a situation where I was unsure of my practice). Would I consciously review some of the things 'I know'? Probably. Faced with a similar situation in the future would my thought processes be the same? Highly unlikely. So, how is it that I finally come to a decision about what to do? Largely, I believe, by intuitive feel, adopting similar processes to those described by Eraut (2000) in relation to tacit learning. I would be guided by 'what feels right' in this situation. That is not to say that I am uninfluenced by the 'things I know' – they are contained within my professional 'self' – but they are not necessarily all in my consciousness.

Later, by reflecting upon my experience, how I handled it, and how the parents reacted, I would probably be able to articulate more fully why I did what I did,



consciously 'surfacing' the knowledge base that I applied to my practice. This is what Schön (1983) referred to as reflection-on-action. Only then, probably, would I be able to say with any certainty which knowledge was most valuable for that situation. This relates also to Benner's (1984) use of paradigm exemplars. Over a period of time an expert practitioner will build up a caseload of relevant experiences that might be drawn upon to inform a particular clinical situation, similar to the way that Eraut (2000) described the application of formal knowledge. However, neither forms of knowing will provide absolute rules for practice. Despite the number of protocols available, they can only be regarded as guides for good practice. This is recognised by the National Institute for Clinical Excellence (NICE), which although preoccupied with the development of evidence-based guidelines (based mainly on randomised controlled trials) does not direct the practitioner how to respond in a local situation.

Having worked out for myself 'why I did what I did', and what types of knowledge informed my practice, I would be in a better position to articulate this professionally. For example, I could write up my experience as a case study or as a professional narrative. This would be likely to lead to further understandings of practice, developed through the deconstructive/reconstructive sense-making that is inevitable with narrative approaches to inquiry. This also illustrates the dynamic nature of practice knowledge. It is constantly changing, in revision with each new application.

### **Critiquing evidence-based practice**

This links directly to my thesis and my original contribution to knowledge (see pages 303-305 and 328-337). Knowledge is the foundation of evidence-based practice. The process of using evidence for practice requires a value judgement to be made about the appropriateness of particular types of evidence. In my view, evidence should be valued according to its practical utility. And, as noted on page 309 of my thesis, "It resides within the domain of each nurse to make a clinical decision based on her own estimation of probability after she has weighed up all the evidence available to her, including her particular knowledge of her patient." This relates also to my earlier reference to nursing craft. Knowing, because it alters with experience, is seldom static (Cutcliffe & McKenna, 2002). Similarly, nursing craft cannot be regarded as a static concept, as the knowledge that nurses employ in their practice is constantly being re-



shaped in response to particular situations. As with qualitative research, knowledge must, “at least in part, be a product of the reciprocal relationship” (Cutcliffe & McKenna, 2002, p.611) between nurses [researchers] and patients [participants]. “The product of a craft is something that serves a specific function . . . The user usually bestows the meaning associated with the craft upon it” (Cutcliffe & McKenna, 2002, p.616). In other words, the interpretation of meaning is specific to the particular context in which thought and action are performed. The practitioner uses the raw material (knowledge in all forms) in an intellectual, interpretive and creative manner to craft an informal theory (of practice) that fits a specific purpose.

My view of evidence-based practice is congruent with the mainstream view and Sackett *et al.*'s (1996) definition, given on page 329, is an almost word perfect representation of my understanding:

“. . . the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients . . . evidence based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research.”

. . . but not quite.

I totally support the “use of current best evidence in making decisions about the care of individual patients” as being the central tenet of this definition, although I would, of course, want to replace the word ‘medicine’ with ‘practice’. Furthermore, the integration of individual clinical expertise is central to my own understanding of pragmatic epistemology.

I would take issue with this definition in two areas. Firstly, for reasons given above, I do not think it is possible to always ‘explicitly’ make use of current best evidence, although I do believe it is possible to articulate it at a later date through skilful reflective inquiry. The second area is not made explicit within the definition itself. It is concerned with understandings of ‘current best evidence’. I do not believe that when Sackett *et al.* wrote this definition their understanding of ‘best evidence’ was



the same as mine. My interpretation of best evidence is judged pragmatically i.e. that which is the most relevant for a particular practice situation. This might, as described above, be evidence from personal experience. Although 'clinical expertise' is offered as the medium for the decision-making process I believe that their understanding of 'evidence', in this definition, relates to more 'formal' knowledge. This is how it has been interpreted in the wider literature.

My concern with evidence-based practice lies not within definitions, however, but in the application of hierarchical models of evidence (e.g. Evans, 2003) that place informal knowledge below more traditional formal ways of knowing. This has the effect of marginalizing what I have termed 'informal' theory and dismissing it as an irrelevance. In this way, more relevant - though informal - evidence might never be considered as 'current best evidence' because it is discarded at the outset. As noted above, this also has the effect of maintaining the dominant (positivist-rooted) discourse. This does not mean that I propose replacing one dominant discourse with another. Rather, I am presenting a case for equity in which traditional science is de-centred.

I do not lay the 'blame' for the presiding dominant view of evidence at anyone else's door but ourselves. As nurses we have the power to shape our own discourse, and it is a challenge to which we must rise. As noted on page 302 of my thesis, "Writers in the nursing profession can lead the way by challenging the dominant discourse and broadening understanding of evidence through publications that emphasise the equitable value of the non-traditional, non-written types of knowledge; that nurses use in their everyday practice." Furthermore, when such accounts are within the public domain it will be possible, as it is currently with qualitative research, to use meta-synthesis to search for "shared meanings, intersubjective and constructed realities, constructed by those people who inhabit and experience those realities" (Cutcliffe & McKenna, 2002, p.613). In this way, the craft of practice may be synthesised with existing theoretical frameworks. The 'science' relates to how the nurse and the patient come together to create caring (Graham, 2001).

Importantly, for nurses to be able to apply evidence to their practice, they need to *know* their knowledge sources, and to develop rigorous methods of verifying them. In



the context of pragmatic epistemology, validity of knowledge lies within its reflexivity. The importance of knowledge – in all its forms – should not be understated. If the ‘bottom line’ for us is that the purpose of knowledge is to improve practice then we should be doing everything in our power to uncover it and place it in the public domain. The most powerful form of knowledge is knowledge that changes practice. Although I do not lay claim to have ‘solved’ nursing science, as I see it, pragmatic epistemology is the basis for a science of nursing practice.

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