

1 **Fathers in neonatal units: Improving infant health by supporting the baby-father bond and**  
2 **mother-father coparenting**

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38

39 *Abstract*

40

41 The Family Initiative's International Neonatal Fathers Working Group, whose members are

42 the authors of this paper, has reviewed the literature on engaging fathers in neonatal units,

43 with the aim of making recommendations for improved health outcomes in neonatal

44 practice. We find that supporting the father-baby bond and supporting coparenting

45 between the mother and the father benefits the health of the baby, for example, improved

46 weight gain and oxygen saturation and enhanced rates of breastfeeding. We find, however,

47 that despite much interest in engaging with parents as full partners in the care of their baby,

1 engaging fathers remains sub-optimal. Fathers typically describe the opportunity to bond  
2 with their babies, particularly skin-to-skin care, in glowing terms of gratitude, happiness and  
3 love. These sensations are underpinned by hormonal and neurobiological changes that take  
4 place in fathers when they care for their babies, as also happens with mothers. Fathers,  
5 however, are subject to different social expectations from mothers and this shapes how  
6 they respond to the situation and how neonatal staff treats them. Fathers are more likely to  
7 be considered responsible for earning, they are often considered to be less competent at  
8 caring than mothers and they are expected to be “the strong one”, providing support to  
9 mothers but not expecting it in return. Our review ends with 12 practical recommendations:  
10 (1) assess the needs of mother and father individually, (2) consider individual needs and  
11 wants in family care plans, (3) ensure complete flexibility of access to the neonatal unit for  
12 fathers, (4) gear parenting education towards coparenting, (5) actively promote father-baby  
13 bonding, (6) be attentive to fathers hiding their stress, (7) inform fathers directly not just via  
14 the mother, (8) facilitate peer-to-peer communication for fathers, (9) differentiate and  
15 analyse by gender in service evaluations, (10) train staff to work with fathers and to support  
16 coparenting, (11) develop a father-friendly audit tool for neonatal units, and (12) organise  
17 an international consultation to update guidelines for neonatal care, including those of  
18 UNICEF.

19

20 *Keywords: neonatal care, fathers, coparenting, bonding, skin-to-skin*

21

## 22 **1. Introduction**

23

24 This paper discusses recent research and practice on engaging fathers in neonatal care and  
25 makes practical recommendations for how to optimise their engagement. It follows a  
26 literature review in 2016 [1].

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28 Three core principles emerge from recent analysis and practice:

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## 45 **2. Engaging fathers benefits infant and family health**

47 *Benefit: baby health*

1  
2 A randomised controlled trial (RCT) compared Family Integrated Care in a neonatal unit  
3 (where parents are supported to become the primary carers of the baby) with standard  
4 neonatal care. The study involved about 1,000 fathers and 800 mothers in Australia, Canada  
5 and New Zealand. The study found greater weight gain in babies and more exclusive  
6 breastfeeding at 21 days in Family Integrated Care [2].  
7

8 The father-baby bond, like the mother-baby bond, benefits the baby. Researchers at Hallym  
9 University Sacred Heart Hospital in South Korea ran an experiment to show the benefit to  
10 infant health of fathers giving “tactile stimulation” to their premature babies. They trained  
11 20 fathers to stroke their babies for 10 minutes a day over five days. They found that babies  
12 who had received such additional tactile care had higher oxygen saturation levels [3].  
13

14 A review in 2016 of 12 studies recorded the following benefits of father skin-to-skin care for  
15 infant health [4]:

- 16 • Increase in baby’s temperature, similarly to mother skin-to-skin care (Sweden,  
17 Germany)
  - 18 • Better blood glucose level (Sweden)
  - 19 • Lower salivary cortisol level, indicating less stress
  - 20 • More settled baby (Sweden, Canada)
- 21

22 The early presence of fathers can help to reduce the time of parent-baby separation after  
23 the birth [5].  
24

25 In research from outside of neonatal unit care, increased father-child attachment has been  
26 shown to improve mother-baby interaction as measured by increased breastfeeding rates.  
27 Recent research from Taiwan shows that supporting father-baby skin-to-skin care improved  
28 rates of exclusive breastfeeding in the first three months, even when not accompanied by  
29 any additional education about breastfeeding itself [6]. This complements research from  
30 Vietnam, showing an association between increased breastfeeding rates and support for the  
31 father-baby bond [7].  
32

33 *Benefit: service savings*  
34

35 In the United States (US) babies of mothers and fathers who attended a four-session  
36 *Creating Opportunities for Parent Empowerment* programme stayed in the hospital on  
37 average four days less [8]. This was, however, not reproduced in the later Family Integrated  
38 Care RCT and needs further exploration [2].  
39

### 40 **3. Engagement with fathers in neonatal care remains suboptimal**

41

42 There is a well-established global interest in an equal “partnership of care” or “therapeutic  
43 alliance” between health professionals and parents in neonatal care. The aim is to enable  
44 parents to be active carers of their baby, supporting them to bond with the baby and  
45 engaging them in decision-making.  
46

1 UNICEF's Baby Friendly Initiative ([www.unicef.org.uk/babyfriendly/baby-friendly-resources/guidance-for-health-professionals/implementing-the-baby-friendly-standards/guide-to-the-baby-friendly-initiative-standards/](http://www.unicef.org.uk/babyfriendly/baby-friendly-resources/guidance-for-health-professionals/implementing-the-baby-friendly-standards/guide-to-the-baby-friendly-initiative-standards/)) defines a set of standards for  
2 this kind of partnership. Family Integrated Care ([familyintegratedcare.com](http://familyintegratedcare.com)) is an advanced  
3 form of partnership with parents, which evolved originally in Estonia and has been  
4 pioneered in Canada. The process is designed in collaboration with parents and staff are  
5 trained to be coaches, mentors and counsellors for parents. In UK the Bliss Baby Charter  
6 defines a set of standards for family-centred care ([www.bliss.org.uk/the-bliss-baby-charter-guide](http://www.bliss.org.uk/the-bliss-baby-charter-guide)).  
7  
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10  
11 Engagement with fathers, however, needs to be improved.  
12

13 A study of family-centred care in 11 European neonatal intensive care units found variable  
14 performance in the support offered to fathers. In six units they were less present than  
15 mothers and perceived less support than mothers. In the others they reported receiving the  
16 same level or even more support than mothers did. The survey found that fathers'  
17 contribution to the total parental presence varied between the units from 12% to 46% and  
18 accounted for 14–43% of the time the babies were held and 10–37% of the provision of  
19 skin-to-skin contact. The study was carried out by the Separation and Closeness Experiences  
20 in Neonatal Environment (SCENE) research group in Finland. It involved 262 families in six  
21 European countries – Finland, Sweden, Norway, Estonia, Spain and Italy [9].  
22

23 A French study found an association between fathers' rating of neonatal care and how well  
24 they felt treated by the staff [10], whereas in contrast, in Ghana, there is total exclusion of  
25 fathers in neonatal care. Fathers are sent away, left out of discussion and planning,  
26 uninformed and subject to unfriendly exchanges with staff [11].  
27

#### 28 **4. Fathers in neonatal units can and should become very close to their babies** 29

30 The experience of mothers and fathers trying to maintain closeness with their babies in a  
31 neonatal unit has been described as "clinging to closeness" during a rollercoaster ride of  
32 closeness and separation. Closeness helps fathers feel like 'real parents' [12].  
33

34 Neonatal care can offer additional opportunities for fathers to be close to their babies,  
35 compared to birth at term, because of the additional needs of the baby that draw both  
36 parents in. A 2008 study of fathers in neonatal units found that they reported being closer  
37 to their babies than fathers of babies born at term [13]. For example, they were quoted as  
38 saying:  
39

40 *"I'm the one who accompanied my daughter to neonatology. I was able to be at her*  
41 *side. It made me very happy."* [14]  
42

43 *"It's important that I can see him, talk to him, simply touch him so that he knows I'm*  
44 *there."* [14]  
45

46 If the mother is immobilised in another location, the father often shuttles back and forth,  
47 supporting the mother-baby connection as well as he can [14]. The feeling of being caught

1 in between mother and baby is common immediately after birth, because fathers want to  
2 be with both the mother and the baby at the same time [15].

3

4 Skin-to-skin contact between fathers and babies generates particularly strong feelings in  
5 fathers – of gratitude, happiness and love. To describe the experience, fathers use words  
6 like “powerful”, “strong”, “fantastic”, “amazing” and “incredible” [16], for example:

7

8 *“I did a bit of kangaroo with him and when I looked at him....wow! I’m going to be*  
9 *paternal, I know.”* [14]

10

11 *“When I first saw M., it was magic, a miracle! I was all alone in the bloc, when they*  
12 *were preparing her for the NICU... I felt like I had to touch my daughter. A very*  
13 *emotional moment, firstly the eye contact and then the physical, a magic contact...”*  
14 [17]

15

16 *“Kangaroo care together...these are the unforgettable moments. When we cried*  
17 *together.”* (mother of twins) ([youtu.be/RGdaKY2HXqc](https://youtu.be/RGdaKY2HXqc))

18

19 *“The first time I held him skin-to-skin, it was really, like, wow! It was like a*  
20 *communion, like a really privileged contact.”* [18]

21

22 *“I looked at my son and then my daughter and then my wife and I just felt, damn I’m*  
23 *so happy.”* (father of twins) [16]

24

25 After skin-to-skin care, some fathers report relief from anxiety, pride (e.g. wanting to share  
26 photos with friends), increase in confidence in care and feeling more equal with the mother  
27 as a carer [16].

28

29 The aforementioned study from Taiwan about teaching fathers tactile stimulation of babies  
30 was associated with fathers reporting more attachment to their baby according to a 35-  
31 point attachment questionnaire [3]. The feeling of closeness between father and baby is  
32 not associated with a lack of support for mother-baby closeness. For many fathers, the  
33 separation of mother and baby is a source of anxiety.

34

35 *“It was a relief [to see mother and baby connected] because I saw that in fact the*  
36 *separation hadn’t lasted long. It made me very happy to see my spouse with the baby*  
37 *on her. There was recovery, and that’s really important.”* [14]

38

### 39 **5. Father-baby attachment has a biological basis, like mother-baby attachment, but has** 40 **not received adequate attention**

41

42 When fathers are more engaged in caring for their babies, they experience stronger  
43 hormonal and neurobiological changes than when not engaged. These changes are, in turn,  
44 associated with short and longer-term benefits for the baby.

45

- 46 • Oxytocin is associated with human sociality, including empathy, social collaboration,  
47 care of babies and romantic love. It increases in fathers as in mothers through

1 physical contact such as skin-to-skin, and decreases less quickly than in mothers post  
 2 skin-to-skin [19]. When fathers are administered oxytocin (via a nasal spray), they  
 3 become more attuned to their babies. The babies' own oxytocin levels also become  
 4 higher and their social orientation and socialising behaviour increase [20].  
 5

- 6 • Testosterone decreases in men when a baby is born. If the father is more involved in  
 7 caring, the testosterone decreases further [21]. Fathers with lower testosterone are  
 8 more affectionate and sensitive towards their babies [22]. Testosterone also drops  
 9 more if the father is more committed to the relationship with the mother after the  
 10 birth of the baby. In these couples, there are stronger correlations in testosterone  
 11 levels between the mother and father [23].  
 12
- 13 • Cortisol is commonly associated with stress, but not necessarily negatively. Fathers  
 14 with higher cortisol levels are more alert and responsive to a baby crying [24]. This  
 15 increase in cortisol might help new parents pay attention to their baby's signals. In  
 16 contrast, higher cortisol levels in both mothers and fathers are associated with a  
 17 poorer relationship between them [25]. Skin-to-skin care is associated with a drop in  
 18 cortisol in fathers, as in mothers, with the effect being longer lasting in fathers post  
 19 skin-to-skin [19].  
 20
- 21 • Prolactin is associated with breastfeeding, but it increases in new fathers too.  
 22 Experienced fathers exhibit increases in prolactin when they hear a baby crying [24].  
 23 Prolactin levels are highest when babies are most needy and vulnerable [26].  
 24

25 Neuroscience has identified two areas of the brain associated with caregiving and both can  
 26 be activated in fathers like mothers, the more so when the father cares for his baby [27].  
 27

- 28 • The **“emotional empathy” brain network**. This network enables an automatic  
 29 understanding of the baby's mental state, allowing the parent to “feel” and  
 30 experience in herself/himself the physical pain or emotional distress of the baby.  
 31
- 32 • The **“socio-cognitive” brain network**. This is a later developing circuit, including  
 33 cortical and frontal brain areas. It is associated with mentalizing, cognitive empathy,  
 34 and social understanding. In relation to caring for a baby, it enables a parent to infer  
 35 baby's mental state from behaviour, to predict the baby's needs and plan future  
 36 caregiving activities.  
 37

38 Actively caring fathers show greater activation in the “emotional empathy” brain network.  
 39 When fathers engage in regular active day-to-day care of children – particularly in the  
 40 extreme case when fathers raise their babies with no maternal involvement – they become  
 41 as attuned and as sensitive to the baby's cues as mothers do [27].  
 42

43 Longitudinal research has found that emotional empathy brain activity in a father in year  
 44 one is associated with better emotional regulation in the child four years later. Similarly,  
 45 higher activity in the socio-cognitive brain network is associated with a child's higher social  
 46 skills four years later [20].  
 47

1 The active engagement of fathers in neonatal units triggers these biological and  
 2 neurobiological processes. This new science helps to explain the feelings of love expressed  
 3 by fathers holding their babies, as described in the previous section.  
 4

## 5 **6. Social expectations of mothers and fathers influence their experiences and behaviour as** 6 **well as the behaviours of healthcare professionals towards them**

7  
 8 A focus of the most recent research on fathers in neonatal units has been the different  
 9 social expectations of mothers and fathers and how these influence – but by no means  
 10 define - their responses to having a baby in a neonatal unit. The father of a premature baby  
 11 starts in a different place from the mother [16].  
 12

13 In a Canadian study, one third of fathers were highly involved, equally with mothers.  
 14 Another third visited regularly but believed the role of the mother was to care for the baby  
 15 and the role of the father was to support the mother. The final third did little or no caring,  
 16 were fearful about handling the baby and had to be strongly encouraged [18]. Such  
 17 variation is not seen among mothers, whose roles are more clearly defined.  
 18

19 Three particular gender attitudes – some would say myths - emerge as significant:

- 20 (1) employment and work are mainly a man's responsibility
- 21 (2) women are better than men at caring
- 22 (3) men should be strong [28-31].  
 23

24 Research and practice in neonatal parenting support should not ignore gender. It is not  
 25 possible to design the best service for mothers or fathers without understanding different  
 26 gender influences of each of them [32]. Healthcare professionals should understand their  
 27 own attitudes to and assumptions about fathers. All that follows describes *tendencies*  
 28 among fathers and mothers. In reality, neonatal unit care needs to deal with diversity of  
 29 responses and needs of both parents.  
 30

### 31 *1. Men are expected to be the lead earner*

32  
 33 In Denmark, like many other countries, fathers only get two weeks of paternity leave in the  
 34 first 14 weeks. This creates a dilemma for fathers of babies admitted to neonatal units. They  
 35 want to take leave in the first two weeks when their babies are in the most critical  
 36 condition; but they also need it later on, including when the baby comes home.  
 37 Furthermore, fathers are typically left in sole care of any older siblings of the baby. This lack  
 38 of time off for the baby places fathers in a particularly difficult situation [30].  
 39

40 *"I have never been this stressed before....I take care of the other children at home*  
 41 *and of my job, but I also need to be here – I want to be here as well."* [28]  
 42

43 *"I hate the fact that I get to see my baby 1 hour a day now as I work 8 am-8 pm. Just*  
 44 *understand that even though you have a little one in the NICU, it does not mean that*  
 45 *the mortgage company or credit company would care."* [33]  
 46

1 Work commitments also mean that sometimes fathers get no information directly from  
2 staff, only via the mother. When this happens, it leads to feelings of being out of control and  
3 not a full parent.

## 4 5 *2. Women are considered “natural” carers; men are not*

6  
7 There is a widespread belief in society as a whole that mothers are “primary” carers and so  
8 fathers are secondary. Hence, fathers in neonatal units can see themselves as secondary  
9 parents and staff can treat them as helpers, rather than full parents [34].

10  
11 *“As a father, you feel left out.” [28]*

12  
13 *“I think that the mother is more important than the father, even though both would  
14 like to hold her.” [14]*

15  
16 *“I didn’t always feel comfortable holding him or giving him a bottle. I didn’t want to  
17 do anything wrong.” [14]*

18  
19 Some studies observe that fathers are less intimate with the baby when the mother is  
20 present – they defer to the mother when she is present [34].

21  
22 Such beliefs, contrasting with the heightened degree of father-baby connection that can  
23 occur in neonatal care, generate a diversity of reactions. Sometimes the beliefs impact on  
24 the father’s own relationship to the child – they hold back from touching or holding the  
25 baby [30]. Meanwhile, at other times, such beliefs make little difference to the father’s own  
26 investment in relating to the baby [14].

27  
28 The primary/secondary construction has long been challenged by development  
29 psychologists who observe the importance of the system of care around the baby, involving  
30 multiple parent-child attachments and support by one parent for the other parent’s  
31 relationship with the child; in this perspective there is no primary or secondary, rather a  
32 team [35].

33  
34 The idea that mothers are natural carers and men are not can lead to mothers and fathers  
35 reacting differently to their own uncertainty and lack of confidence. Fathers may need and  
36 want more detailed and specific instruction, fearful of their perceived innate inability to care  
37 [28].

38  
39 *“Tell me what it means when my son raises arms. It means, “I want peace.” It is  
40 helpful to receive specific instructions. Try to interpret it your way [the nurses say].  
41 What am I supposed to interpret? I have no idea.” [28]*

## 42 43 *3. Men are expected to be strong and protective*

44  
45 Research shows that fathers of pre-term babies are considerably more at risk of depression  
46 and anxiety than fathers of babies born at term, though they are less affected than mothers  
47 of pre-term babies [36]. Multiple earlier studies from France, Canada, Sweden, Australia and

1 UK have shown that many fathers in neonatal units do not feel at liberty to 'let go'  
2 emotionally [28].

3

4 Some of the fathers in a Danish study expressed constant worry and an inability to relax.  
5 "There is chaos in my mind," one father said. But they also described how they strive to  
6 appear calm and show none of this, in line with masculine ideals of independence and self-  
7 sufficiency [28,31].

8

9 *"I don't want to be weak in front of my wife. I don't think she knows how bad I am*  
10 *hurting right now."*

11

12 *"We guys like to fix things and this is something that cannot be fixed and there's got*  
13 *to be some frustration about that."* [33]

14

15 A recent US study found that, on returning home, cortisol levels in fathers showed they  
16 were more stressed than mothers, and yet they did not report this in a *Perceived Stress*  
17 *Scale* questionnaire [37]. The fathers stated that their role was to fulfil their partner's needs  
18 and expectations, and that they did not expect reciprocal support from their partners  
19 [16,28].

20

21 *"I have to cheer her up, but no one helps me. It is difficult to bear. I do not show that I*  
22 *am burnt out; instead, I suppress my feelings."* [28]

23

24 *"My wife does not know that I am about to lose patience."* [28]

25

26 *"I wouldn't want my wife asking me how I feel."* [33]

27

28 Fathers said they needed time alone with staff, to be able to talk freely about their  
29 difficulties without showing their vulnerability to their partners. [28]

30

## 31 **7. Evidence based recommendations for engaging fathers in neonatal units and optimising** 32 **practice**

33

34 On the basis of this review of recent evidence and practice this working group makes 12  
35 recommendations for practice.

36

### 37 *1. Assessing fathers' and mothers' needs individually*

38

39 Fathers' needs can be different from mothers' needs, and so assessment should consider  
40 parents from the same family as separate individuals.

41

42 The National Perinatal Association in the US has established guidelines for the psychosocial  
43 care of parents ([www.nationalperinatal.org/Support4NICUParents](http://www.nationalperinatal.org/Support4NICUParents)). They recommend that  
44 mental health professionals meet with all parents/primary caregivers within one to three  
45 days of admission to establish a working relationship, normalize emotional distress and  
46 evaluate risk for psychological distress (e.g., depression, post-traumatic stress). Both

1 mothers and fathers should be screened for distress within the first week after admission to  
2 the NICU and re-screened prior to the baby's discharge.

3  
4 Measures such as the Clinical Interview for Parents of High-Risk Infants (CLIP) have been  
5 found to be less good at predicting depression and anxiety in fathers of pre-term babies  
6 than in mothers [36]. This supports the need to adapt tools designed for mothers before  
7 applying them to fathers.

8  
9 Fathers are, of course, diverse, just as mothers are. Gender norms influence but do not  
10 define the behaviours of fathers. Fathers come with widely different experiences – socio-  
11 economic position, culture, race, age [30,32]. Individual assessment will enable recognition  
12 of such diversity.

### 13 14 2. *Care plans*

15  
16 Care plans drawn up with parents should specify what each parent needs individually, as  
17 well as jointly, to allow for differences between parents. Of particular significance will be  
18 the timing of support around each parent's availability [38].

### 19 20 3. *Accessibility of neonatal unit*

21  
22 Family-centred neonatal care involves making neonatal units family friendly and that, of  
23 course, includes fathers.

24  
25 Complete flexibility of access for fathers is important, to enable visiting at any time of day  
26 around their work and their care of other children. The physical space is important – one  
27 survey showed that units providing opportunities for overnight stays for at least one parent  
28 had a significantly higher parental presence [39]. The imagery and language in printed  
29 materials and the attitudes and body language of professionals are both important [31]. A  
30 hospital in Poland has task lists by the cots, divided into "mother", "father" and "nurse"  
31 ([youtu.be/RGdaKY2HXqc](https://youtu.be/RGdaKY2HXqc)).

### 32 33 4. *Coparenting education*

34  
35 Parenting education should be directed equally at both parents within the neonatal unit.

36  
37 Education in the hospital should also prepare parents for the return home, where they have  
38 to work as a team, caring for the baby and for each other. One study found that parents  
39 were worried about each other on returning home – mothers tended to worry about  
40 fathers' work-life balance and fathers about mothers' mental health [40].

41  
42 As a future innovation we propose the development of parenting education based on a  
43 coparenting approach. This approach rejects the "primary"/"secondary" idea and replaces it  
44 with the idea of teamwork. Parenting skills are considered, but also how parents can work  
45 together and support each other, fathers for mothers and mothers for fathers. Coparenting  
46 is particularly important in stressful situations where parents need to look after each other  
47 more.

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## 5. *Father-baby closeness*

Neonatal units can support father-baby closeness in a variety of ways.

- Provide privacy and time to bond with their baby in a peaceful and calm environment [12,16].
- Help fathers to recognise a baby's responsiveness to them, for example, how the baby calms down when the father cares [12].
- Help fathers be autonomous carers for the baby – involved in decision-making and understanding the technology [41,42].
- Allow fathers to see other fathers on the unit being close to their babies [16,41]. This communicates a different social norm.

The new understanding of biology and neurobiology of fatherhood marks out father-baby skin-to-skin as a particularly important factor, triggering instincts that tune the father into caring and introducing them into an active paternal role [43]. Skin-to-skin care has a unique role in helping fathers to build confidence as equal carers, not just “helpers”, and to discover the joy of loving their baby [34,44]. Skin-to-skin requires adequate time and time alone with the baby, and the father should feel able to practise skin-to-skin even when the mother is present. Mothers too, of course, need protected time and space to develop skin-to-skin care for the baby.

## 6. *Be attentive to fathers hiding stress*

Given that many fathers feel the need to be “the strong one” and to provide support to, but not receive support from their partners, the neonatal staff needs to take particular care to afford fathers the space to express their feelings safely, and possibly confidentially from their families [31,34]. The staff needs to be mindful that fathers can mask fear through withdrawal, or the opposite, such as anger and bravado [31]. Simply communicating to fathers that their reactions are normal is important [15].

*“I wanted to hear this is a normal reaction and you are going to handle it, but nobody spoke to me.” [15]*

## 7. *Inform fathers directly*

Fathers typically require information as a way of feeling less out of control [15,28]. It is important to inform the fathers directly, not solely via the mother, and that means being able to communicate at times when he is available around work and care for older siblings [34]. It is preferable to provide important updates to parents when they are together: two people will understand the information in more diverse ways, can discuss and support each other after, and one can ask questions the other might not feel comfortable to ask (youtu.be/RGdaKY2HXqc).

A study in Iran found that running an education class specifically for fathers a few days after the baby's admission to a neonatal unit improved their knowledge. The researchers, working with 23 fathers, used a US programme, HUG Your Baby ([www.hugyourbaby.org](http://www.hugyourbaby.org)).

1 This consisted of one session, a DVD and a handout. The programme focused on baby sleep,  
2 crying and attachment [45]. Information for fathers should include the biology and  
3 neurobiology of fatherhood, as outlined above. Understanding of the science helps fathers  
4 understand the difference between what is “natural” and what is social convention.  
5

6 Professor Khashu in UK has developed a new resource for fathers of babies in neonatal  
7 units, with Inspire Cornwall CIC, called DadPad Neonatal©. This is comprehensive and  
8 information rich and it addresses all the concerns that are identified in the research, as well  
9 as facilitating a father’s direct communication with the neonatal unit. It has been developed  
10 in such a way that it can be kept as a memento of the neonatal journey. Meanwhile in  
11 Australia, a text messaging service for fathers, SMS4Dads, is about to be tested with fathers  
12 of premature babies – SMS4Dads Early Arrivals ([www.sms4dads.com](http://www.sms4dads.com)). In the US, a NICU-2-  
13 Home smartphone app has been trialled, and found to improve parenting self-efficacy,  
14 discharge preparedness and length of stay by those who use it regularly [46].  
15

16 A recent US study finds that fathers would like both mothers and fathers to have the same  
17 frequent direct updates on their mobile phones. These fathers observed the tendency for  
18 health staff to inform mothers preferentially. They also wanted to be able to access more  
19 emotional support from professionals [47].  
20

#### 21 *8. Facilitate peer-to-peer communication for fathers*

  
22

23 A US study looked at what fathers of babies in neonatal care talked about with each other  
24 on social media, in their own space [33]. The researchers found that fathers ask questions,  
25 offer suggestions to each other, share information they have found elsewhere and share  
26 personal experiences. Topics of conversation include the health of the baby, healthcare  
27 costs, the pressure of work and caring for older siblings, the lack of social support and the  
28 difficulty of having to be the strong one.  
29

30 *"I think that one thing I could have used was communication with other dads who*  
31 *had been through the NICU experience. The moms were able to bond in the pumping*  
32 *room but I had no place to meet or talk with other dads that had gone through what*  
33 *I was experiencing."*  
34

35 *"The whole preemie thing is terrifying. Everybody around the situation is focused on*  
36 *mom/baby. Dads are left to worry about everything and everyone. As a dad, you may*  
37 *feel lonely. Hopefully, you will get some support by talking to people in here."*  
38

39 The same researcher later published evidence about what fathers want, with peer-to-peer  
40 communication one of the wished for aspects of support [46].  
41

42 *"It would have been helpful to have maybe more contact with NICU fathers such as*  
43 *men with children who were either currently or had been in the NICU at some point."*  
44

45 *"My wife and I went to one of the support group meetings that were run by a social*  
46 *worker. I was surprised there was only one other father. Overall, I would say fathers*

1           *wouldn't have the time to actually go to those support groups, so maybe something*  
2           *like Facebook would be better for fathers."*

3  
4   One mother said:

5  
6           *"I had a very hard time at first. I felt very guilty. There were some other NICU moms*  
7           *who sat me down and talked to me....It was very encouraging! But there was not*  
8           *really any of that for fathers."*

9  
10   In Australia a weekly two-hour fathers group is organised. Group discussions are animated,  
11   typically featuring strong expressions of sadness, anxiety and anger. Fathers attending the  
12   groups say they particularly appreciate the connection with others in a similar position. In  
13   addition to the meetings, a closed Facebook page has been set up, moderated by a member  
14   of neonatal staff. To organise groups like this, the neonatal unit must provide staff, a room  
15   and active promotion to fathers on the unit [29].

16  
17   Ideally there should be a variety of provisions, since not all fathers want the same thing.  
18   Nevertheless, if fathers' groups, on-line and off-line, are well run, they are popular [31].

#### 19 20   9. *Differentiate by gender in evaluation outcome measurement*

21  
22   Service evaluation should always collect data individually from both parents and analyse  
23   results broken down by gender. This is relevant to the evaluation of staff quality, parental  
24   involvement in caring, communication and information, unit environment and discharge  
25   planning [31].

26  
27   Engaging fathers in research requires specific recruitment techniques, for example:

- 28       • Don't require fathers to disclose their answers to their partners – access the parents  
29       separately.
- 30       • Access fathers around their working hours.
- 31       • Offer the option of a male researcher to interview fathers in case any would find that  
32       easier.
- 33       • Persist in engaging fathers who are more difficult to reach.
- 34       • Offer different venues for data collection, including on-line. The home may not be a  
35       suitable environment for some [31].

#### 36 37   10. *Staff training*

38  
39   Studies have shown that nurses have an important role as facilitators of father engagement.  
40   [46] Nurses, however, tend to have more difficulty relating to fathers than to mothers and  
41   may benefit from coaching to overcome this [48,49].

42  
43   Staff training should include engaging fathers across all aspects of care. A special section on  
44   "engaging fathers" in a training course all about supporting mothers is not enough. We  
45   propose an innovation in staff training, namely teaching a coparenting approach that  
46   focuses on enabling parents to work together effectively.

47

1 *11. Father-friendly service audit tool*

2

3 An audit tool for neonatal services, *how father-friendly are we?* could be built to analyse any  
4 service in relation to all the recommendations above. An existing tool of this kind is the  
5 Fatherhood Institute's 10-point father-friendly commissioning checklist, covering such  
6 things as organisation policy, staff training and assessment of fathers' needs [50].

7

8 *12. Review international standards for neonatal care in the light of recent evidence*

9

10 The importance of supporting father-baby bonding and mother-father coparenting are not  
11 adequately reflected in international standards, such as UNICEF's Baby Friendly Standards. A  
12 review is now needed.

13

14 **8. Conclusion**

15

16 This paper sets a new agenda for international action, with 12 recommendations focusing  
17 on how neonatal units can support father-baby bonding and mother-father coparenting,  
18 both of which improve infant health.

19

20 The Family Initiative's International Neonatal Fathers Working Group will take forward these  
21 recommendations, seeking to disseminate knowledge, host discussion among professionals  
22 and develop new tools for best practice. The authors invite all those interested to get  
23 involved by visiting [www.familyinitiative.org.uk/neonatal-fathers](http://www.familyinitiative.org.uk/neonatal-fathers).

24

25

## References

1. Ireland, J., Khashu, M., Cescutti-Butler, L., van Teijlingen, E., Hewitt-Taylor, J., 2016. [Experiences of fathers with babies admitted to neonatal care units: A review of the literature](#). *Journal of Neonatal Nursing* 22 (4), 171-176.
2. O'Brien, K., Robson, K., Bracht, M., Cruz, M., Lui, K., Alvaro, R., da Silva, O., Monterrosa, L., Narvey, M., Ng, E., Soraisham, A., Ye, X.Y., Mirea, L., Tarnow-Mordi, L., Lee, S.K., 2018. [Effectiveness of Family Integrated Care in neonatal intensive care units on infant and parent outcomes: a multicentre, multinational, cluster-randomised controlled trial](#). *The Lancet Child & Adolescent Health* 2 (4), 245-254.
3. Kim, M.A., Jim, S-J., Cho, H., 2016. [Effects of tactile stimulation by fathers on physiological responses and paternal attachment in infants in the NICU: A pilot study](#). *Journal of Child Health Care* 21 (1), 36-45.
4. Shorey, S., He, H-G., Morelius, E., 2016. [Skin-to-skin contact by fathers and the impact on infant and paternal outcomes: an integrative review](#). *Midwifery* 40, 207-217.
5. Koliouli, F., Zaouche Gaudron, C., Raynaud, J.P., 2016. [Fathers' life experiences in the NICU: a qualitative study](#). *Journal of Neonatal Nursing* 22 (5), 244-249.
6. Wang, S-L., 2018. [The effective of early skin-to-skin contact with fathers on their supporting breastfeeding](#). *International Journal of Nursing and Health Sciences* 12(2).
7. Bich, T.H., Hoa, D.T.P., Ha, N.T., Vui, L.T., Nghia, D.T., Målqvist, M., 2015. [Fathers' involvement and its effect on early breastfeeding practices in Viet Nam](#). *Maternal & Child Nutrition* 12 (4), 768-777.
8. Melnyk, B.M., Feinstein, N.F., Alpert-Gillis, L., Fairbanks, E., Crean, H.F., Sinkin, R.A., Stone, P.W., Small, L., Tu, X., Gross, S.J. 2006. [Reducing premature infants' length of stay and improving parents' mental health outcomes with Creating Opportunities for Parent Empowerment \(COPE\) Neonatal Intensive Care Unit Program: a randomized, controlled trial](#). *Pediatrics* 118 (5).
9. SCENE, 2016. [Parent and nurse perceptions on the quality of family-centred care in 11 European NICUs](#). *Australian Critical Care* 29 (4), 201-209.
10. Koliouli, F., Zaouche Gaudron, C., 2017. [Healthcare professionals in a neonatal intensive care unit: source of social support for fathers](#). *Journal of Neonatal Nursing* 24 (3), 154-158.
11. Adama, E.A., Sundin, D., Bayes, S., 2017. [Ghanaian fathers' experiences of caring for preterm infants: a journey of exclusion](#). *Journal of Neonatal Nursing* 23 (6), 275-281.
12. Mäkelä, H., Axelin, A., Feeley, N., Niela-Vilén, H., 2018. [Clinging to closeness: the parental view on developing a close bond with their infants](#). *Midwifery* 62, 183-188.

- 1 13. Lindberg, B., Axelsson, K., Öhrling, K., 2008. [Adjusting to being a father to an infant born](#)  
2 [prematurely: experiences from Swedish fathers](#). *Scandinavian Journal of Caring Sciences* 22  
3 (1), 79-85.  
4
- 5 14. Martel, M-J., Milette, I., Bell, L., Tribble, D.S., Payot, A., 2016. [Establishment of the](#)  
6 [relationship between fathers and premature infants in neonatal units](#). *Advances in Neonatal*  
7 *Care* 16 (5):1.  
8
- 9 15. Lindberg, B., Axelsson, K., Öhrling, K., 2007. [The birth of premature infants: experiences](#)  
10 [from the fathers' perspective](#). *Journal of Neonatal Nursing* 13 (4), 142-149.  
11
- 12 16. Olsson, E., Eriksson, M., Anderzén-Carlsson, A., 2017. [Skin-to-skin contact facilitates](#)  
13 [more equal parenthood - a qualitative study from fathers' perspective](#). *Journal of Pediatric*  
14 *Nursing* 34, e2–e9.
- 15 17. Koliouli, F., Zaouche Gaudron, C., Casper, C., Berdot-Talmier, L., Raynaud, J. P., 2017.  
16 [Soutien social et expérience paternelle des pères de nouveau-nés prématurés](#). *Familles,*  
17 *Hommes et Masculinités* 26.  
18
- 19 18. Feeley, N., Sherrard, K., Waitzer, E., Boisvert, L., 2013. [The father at the bedside:](#)  
20 [patterns of involvement in the NICU](#). *Journal of Perinatal and Neonatal Nursing* 27 (1), 72–  
21 80.  
22
- 23 19. Cong, X., Ludington-Hoe, S.M., Hussain, N., Cusson, R.M., Walsh, S., Vazquez, V., Briere,  
24 C., Vittner, D., 2015. [Parental oxytocin responses during skin-to-skin contact in pre-term](#)  
25 [infants](#). *Early Human Development* 91 (7), 401-406.  
26
- 27 20. Abraham, E., Hendler, T., Zagoory-Sharon, O., Feldman, R., 2016. [Network integrity of](#)  
28 [the parental brain in infancy supports the development of children's social competencies](#).  
29 *Social Cognitive and Affective Neuroscience* 11 (11), 1707–1718.  
30
- 31 21. Gettler, L.T., McDade, T.W., Agustin, S.S., Feranil, A.B., Kuzawa, C.W., 2015. [Longitudinal](#)  
32 [perspectives on fathers' residence status, time allocation, and testosterone in the](#)  
33 [Philippines](#). *Adaptive Human Behavior and Physiology* 1 (2), 124–149.  
34
- 35 22. Weisman, O., Zagoory-Sharon, O., Feldman, R., 2014. [Oxytocin administration, salivary](#)  
36 [testosterone, and father–infant social behaviour](#). *Progress in Neuro-Psychopharmacology &*  
37 *Biological Psychiatry* 49, 47-52.  
38
- 39 23. Saxbe, D.E., Edelstein, R.S., Lyden, H.M., Wardecker, B.M., Chopik, W.J., Moors, A.C.,  
40 2017. [Fathers' decline in testosterone and synchrony with partner testosterone during](#)  
41 [pregnancy predicts greater postpartum relationship investment](#). *Hormones and Behavior*  
42 90, 39-47.  
43
- 44 24. Fleming, A.S., Corter, C., Stallings, J., Steiner, M., 2002. [Testosterone and prolactin are](#)  
45 [associated with emotional responses to infant cries in new fathers](#). *Hormonal Behavior* 42  
46 (4), 399-413.

- 1  
2 25. Saxbe, D.E., Adam, E.K., Schetter, C.D., Guardino, C.M., Simon, C., McKinney, C.O.,  
3 Shalowitz, M.U., Kennedy, E., 2015. [Cortisol covariation within parents of young children:  
4 moderation by relationship aggression](#). *Psychoneuroendocrinology* 62, 121–128.  
5  
6 26. Gettler, L.T., 2014. [Applying socioendocrinology to evolutionary models: fatherhood and  
7 physiology](#). *Evolutionary Anthropology* 23 (4), 146-160.  
8  
9 27. Abraham, E., Hendler, T., Shapira-Lichter, I., Kanat-Maymone, Y., Zagoory-Sharona, O.,  
10 Feldman, R., 2014. [Father's brain is sensitive to childcare experiences](#). *PNAS* 111 (27), 9792-  
11 9797.  
12  
13 28. Noergaard, B., Ammentorp, J., Fenger-Gron, J., Kofoed, P-E., Johannessen, H., 2017.  
14 [Fathers' needs and masculinity dilemmas in a neonatal intensive care unit in Denmark](#).  
15 *Advances in Neonatal Care* 17 (4), E13–E22.  
16  
17 29. Thomson-Salo, F., Kuschel, A., Kamlin, O.F., Cuzzilla, R., 2017. [A fathers' group in NICU:  
18 recognising and responding to paternal stress, utilising peer support](#). *Journal of Neonatal  
19 Nursing* 23 (6), 294–298.  
20  
21 30. Provenzi, L., Barello, S., Fumagalli, M., Graffigna, G., Sirgiovanni, I., Savarese, M.,  
22 Montiroso, R., 2016. [A comparison of maternal and paternal experiences of becoming  
23 parents of a very preterm infant](#). *Journal of Obstetric, Gynecologic, & Neonatal Nursing* 45  
24 (4), 528–541.  
25  
26 31. Hugill, K., Harvey, M., 2012. [Fatherhood in midwifery and neonatal practice](#). (Mark Allen  
27 Group, UK).  
28  
29 32. Provenzi, L., Santoro, E., 2015. [The lived experience of fathers of preterm infants in the  
30 Neonatal Intensive Care Unit: a systematic review of qualitative studies](#). *Journal of Clinical  
31 Nursing* 24 (13-14), 1784-1794.  
32  
33 33. Kim, H.N., Wyatt, T.H., Li, X., Gaylord, M., 2016. [Use of social media by fathers of  
34 premature infants](#). *Journal of Perinatal and Neonatal Nursing* 30 (4), 359-366.  
35  
36 34. Ireland, J., Khashu, M., Cescutti-Butler, L., van Teijlingen, E., Hewitt-Taylor, J., 2016.  
37 [Experiences of fathers with babies admitted to neonatal care units: a review of the  
38 literature](#). *Journal of Neonatal Nursing* 22 (4), 171–176.  
39  
40 35. Cabrera, N.J., Volling, B.L., Barr, R., 2018. [Fathers are parents, too! Widening the lens on  
41 parenting for children's development](#). *Child Development Perspectives*, on-line only at time  
42 of writing, [doi.org/10.1111/cdep.12275](https://doi.org/10.1111/cdep.12275).  
43  
44 36. Candelori, C., Trumello, C., Babore, A., Keren, M., Romanelli, R., 2015. [The experience of  
45 premature birth for fathers: the application of the Clinical Interview for Parents of High-Risk  
46 Infants \(CLIP\) to an Italian sample](#). *Frontiers in Psychology* 6.  
47

- 1 37. Garfield, C.F., Simon, C.D., Rutsohn, J., Lee, Y.S., 2017. [Stress from the neonatal intensive](#)  
2 [care unit to home: paternal and maternal cortisol rhythms in parents of premature infants.](#)  
3 The Journal of Perinatal & Neonatal Nursing, on-line only at time of writing, doi:  
4 10.1097/JPN.0000000000000296.  
5
- 6 38. Walmsley, R., Jones, T., 2016. [Are fathers supported by neonatal teams? An exploration](#)  
7 [of the literature.](#) Journal of Neonatal Nursing 22 (6), 292–296.  
8
- 9 39. Raiskila, S., Axelin, A., Toome, L., Caballero, S., Tandberg, B.S., Montiroso, R., Normann,  
10 E., Hallberg, B., Westrup, B., Ewald, U., Lehtonen, L., 2017. [Parents' presence and parent–](#)  
11 [infant closeness in 11 neonatal intensive care units in six European countries vary between](#)  
12 [and within the countries.](#) Acta Paediatrica 106 (6), 878-888.  
13
- 14 40. Garfield, C.F., Lee, Y., Kim, H.N., 2014. [Paternal and maternal concerns for their very](#)  
15 [low-birth-weight infants transitioning from the NICU to home.](#) Journal of Perinatal Neonatal  
16 Nursing 28 (4), 305-312.  
17
- 18 41. Feeley, N., Waitzer, E., Sherrard, K., Boisvert, L., Zelkowitz, P., 2012. [Fathers' perceptions](#)  
19 [of the barriers and facilitators to their involvement with their newborn hospitalised in the](#)  
20 [neonatal intensive care unit.](#) Journal of Clinical Nursing 22 (3-4), 521-530.  
21
- 22 42. Treherne, S.C., Feeley, N., Charbonneau, L., Axelin, A., 2017. [Parents' perspectives of](#)  
23 [closeness and separation with their preterm infants in the NICU.](#) Journal of Obstetric,  
24 Gynecologic & Neonatal Nursing 46 (5), 737-747.  
25
- 26 43. Koliouli, F., 2017. [The role of the father in the caregiving process: parental sense of](#)  
27 [competence, paternal stress and skin-to-skin contact.](#) Paper at the International Conference  
28 on Family Nursing and Healthcare, September 2017, San Antonia, Texas, U.S.A.  
29 [familynursing.conferenceseries.com/abstract/2017/the-role-of-the-father-in-the-caregiving-](#)  
30 [process-parental-sense-of-competence-paternal-stress-and-skin-to-skin-contact](#)  
31
- 32 44. Helth, T.D., Jarden, M., 2012. [Fathers' experiences with the skin-to-skin method in NICU:](#)  
33 [competent parenthood and redefined gender roles.](#) Journal of Neonatal Nursing 19 (3),  
34 114–121.  
35
- 36 45. Kadivar, M., Mozafarinia, S.M., 2013. [Supporting fathers in a NICU: effects of the HUG](#)  
37 [Your Baby program on fathers' understanding of preterm infant behaviour.](#) The Journal of  
38 Perinatal Education, 22 (2), 113–119.  
39
- 40 46. Garfield, C.F., Lee, Y.S., Kim, H.N., Rutsohn, J., Kahn, J.Y., Mustanski, B., Mohr, D.C., 2016.  
41 [Supporting parents of premature infants transitioning from the NICU to home: a pilot](#)  
42 [randomized control trial of a smartphone application.](#) Internet Interventions 4 (2), 131-137.  
43
- 44 47. Kim, H.N., 2018. [Social support provision: perspective of fathers with preterm infants,](#)  
45 Journal of Pediatric Nursing 39, 44-48.  
46

- 1 48. Johnson, A.N., 2008. [Engaging fathers in the NICU: taking down the barriers to the baby.](#)
- 2 The Journal of Perinatal & Neonatal Nursing 22 (4), 302-306.
- 3
- 4 49. Ammentorp, J., Kofoed, P., 2010. [Coach training can improve the self-efficacy of](#)
- 5 [neonatal nurses. A pilot study.](#) Patient Education and Counseling 79 (2), 258-261.
- 6
- 7 50. Fatherhood Institute, 2009. [Commissioning father-inclusive parenting programmes: a](#)
- 8 [guide.](#) [www.fatherhoodinstitute.org/uploads/publications/444.pdf](http://www.fatherhoodinstitute.org/uploads/publications/444.pdf).

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