Diabetes Register.

Table 1. Theme, main categories and categories

Theme	Main categories	Categories
While implementation demands new ways of working, the Diabetes Questionnaire adds a broader picture	The Diabetes Questionnaire, a tool for more person-centred clinical visits	Preparations for clinical visits given another dimension
		Can bring the important aspects to light
		Can broaden the horizons
	The processes of initiating the implementation of the Diabetes Questionnaire	Differences in engagement among healthcare management and co-workers
		To start and to establish new routines
		Healthcare professionals' experiences of the support during implementation
		Pros and cons regarding the questionnaire, its items, and dimensions
		Manners of administration and completion of the Diabetes Questionnaire
		Thoughts ahead – opportunities and concerns

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Effect of WhatsApp messaging based intervention on insulin adherence and treatment effectiveness in diabetic patients in central India

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Background and aims: Low adherence to pharmacological therapy and monitoring by patients with diabetes mellitus is very common and represents a challenge. Technological Help has came to a rescue in connecting with patients during this covid-19 period by enhancing communication and the reach for the healthcare. WhatsApp is a very commonly used social media app and its available with most of the patients. This study examined the effect of an intervention using WhatsApp® messaging on insulin adherence and treatment effectiveness in patients with diabetes

Materials and methods: A randomized clinical trial was performed with 573 patients who had diabetes and/or hypertension and who had enrolled in a diabetes clinic. The patients were randomly assigned to either the intervention group ($n = 296$), which received usual care plus WhatsApp messages-based dose titration for insulin with an emphasis on medication adherence, or the control group. The control group ($n = 277$) only received usual care. Medication adherence, as measured by the Morisky-Green Test, was compared after 32 weeks

Results: After the follow-up period (8 months), 78.5% of the patients in the intervention group were adherent versus 57.2% in the control group. Also, the number of patients achieving target hba1c <7% were more in intervention group 73 % as compared to control group 52 %.

Conclusion: Diabetes is a progressive disease, and the treatment should be continuous. Technological aids using WhatsApp could be useful as a reinforcement to increase adherence to medication and achieving target levels of optimum health. This approach is well accepted by patients and easily accessible to them and it maintains connection between patient and caregivers during and after covid-19 period. If used judiciously it can reduce the burden on our healthcare system and yield better outcomes in terms of better treatment adherence and treatment outcomes.

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Long-term HbA_{1c} outcomes with and without intermittent CGM use in adults with type 2 diabetes participating in the Onduo Program

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Background and aims: The Onduo Virtual Diabetes Clinic (VDC) for people with type 2 diabetes (T2D) combines a mobile app, remote lifestyle coaching and video consultations with board-certified endocrinologists for medication management and prescription of real-time (rt)CGM devices for intermittent use in high risk participants. This analysis examined change in HbA1c at 6 months and 1 year in VDC participants with and without intermittent rtCGM use.

Materials and methods: Adults ≥18 years of age with T2D who enrolled in the VDC program from February 2018 through April 2019 with baseline and follow-up HbA1c values at 1 year were included. The CGM group was required to have used CGM ≥30 days prior to the follow-up HbA1c measurement. Outcomes included within group change in mean HbA1c with and without CGM use. Subgroup analysis was performed for participants with 6-month and 1-year data. Between group comparisons for change in HbA1c stratified by baseline categories of >9.0%, 8.0 to 9.0%, 7.0 to <8.0%, <7.0% and by <8.0% and ≥8.0% were evaluated by a two-sample t-test for equivalence of mean change in HbA1c between groups.

Results: Of the cohort (n=772), 45.9% (n=354) used CGM and 54.1% (n=418) did not use CGM. At baseline the CGM group was significantly younger (mean±SD): 53.3±8.6 vs 55.1±9.4 years, had higher HbA1c: 7.9%±1.8 vs 7.6%±1.7, and greater insulin use: 36.2% vs 28.5%. Change in HbA1c at 1 year is presented in the Table. The increase in participants meeting the Health Effectiveness Data and Information Set (HEDIS) target of HbA1c <8.0% was greater in the CGM group, 55.1% to 78.3%, vs no CGM, 60.8% to 74.0% (p=0.002). Subgroup analysis (n=468, 60.6%) revealed significant improvement in HbA1c at 6 months and 1 year for both the CGM and no CGM groups with a baseline HbA1c >8.0% (p<0.001). On average participants meeting the American Diabetes Association (ADA) treatment target of HbA1c <7.0% at baseline remained at target at 6 months and 1 year.

Conclusion: Participation in the Onduo VDC was associated with a significant reduction in HbA1c at 1 year in those not meeting treatment targets, with approximately 2-fold greater improvement with CGM use. These results suggest that improvement in HbA1c observed at 6 months was maintained at 1 year.

Table. Change in HbA1c at 1-year Stratified by Baseline HbA1c Category and CGM Use

	CGM (n=354)			No CGM (n=418)			
Baseline HbA1c	Baseline HbA1c	1-yr HbA1c	Change	Baseline HbA1c	1-yr HbA1c	Change	p-value
Overall	7.9±1.8	7.2±1.3	-0.7±1.7	7.6±1.7	7.4±1.4	-0.2±1.3	<0.001
>9.0%	10.8±1.5	8.0±1.9	-2.8±2.2	10.7±1.8	9.0±1.8	-1.8±2.0	0.006
8.0% to 9.0%	8.4±0.3	7.4±1.1	-1.1±1.2	8.4±0.3	7.9±1.1	-0.6±1.2	0.02
7.0% to 7.9%	7.4±0.3	7.3±1.0	-0.2±0.9	7.4±0.3	7.4±1.0	-0.1±1.0	0.50
<7.0%	6.4±0.4	6.5±0.8	0.1±0.7	6.3±0.4	6.6±0.8	0.3±0.7	0.02

*Equivalence of mean change in HbA1c between groups; data are mean±SD

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Development of a new device for screening for peripheral diabetic neuropathy

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Background and aims: We developed a new tool called 'Vibrascan' that utilises a vibratory plate for the screening of peripheral diabetic neuropathy. Its design was based on the mechanics of the Neurothesiometer, but is intended as a more intuitive, operator- independent testing instrument.

Materials and methods: Twenty healthy subjects were tested using both Neurothesiometer and VibraScan. For using the Neurothesiometer, a

single operator measured VPT (vibration perception thresholds in Volts (V). VibraScan can be operated independently by the subject in the sitting position and placing both feet on the vibrating plate. The range of vibration used is the same for both devices (i.e. from 0V to 50V). The frequency and amplitude of VibraScan is completely programmable such that severity level can be interpreted automatically by the device. VPT measurements by both devices were correlated using the Bland - Altman method in order to measure the agreement between both devices.

Results: Mean VPT measured for left and right foot using Neurothesiometer was 4.53 ± 0.65 V and 4.97 ± 0.57 V, and 4.76 ± 0.60 V and 5.22 ± 0.67 V for left and right foot using VibraScan. There was very good correlation between individual values for each device ($r = 0.893$, $p < 0.01$ for right foot and $r = 0.816$, $p < 0.01$ for left foot). Despite the differences in operation technique, there was very little difference in VPT measurements between devices. when using the using Bland-Altman method.

Conclusion: The intuitive, quick and essentially observer independent nature of VibraScan enables an important new normal method of screening for the at risk foot in diabetic individuals. Further studies on diabetic subjects with varying severity of neuropathy are planned to help strengthen its possible role for screening patients in tandem with their annual eye screening visit, a much awaited unified approach in the modern management of diabetes.

Disclosure: **D. Coppini:** None.

SO 40 CGM

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High treatment satisfaction and less severe hypoglycaemia after 24-month use of intermittently scanned continuous glucose monitoring

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Background and aims: Nationwide reimbursement of intermittently scanned continuous glucose monitoring (isCGM) was introduced in Belgium in 2016. This prospective observational multicentre real-world trial (FUTURE) studies the impact of isCGM on quality of life (QOL) and glycaemic control of people with type 1 diabetes (T1D) in 3 diabetes centres. Here, we report the 24-month data of the FUTURE trial.

Materials and methods: Between July 2016 and July 2018, 1906 T1D adults were consecutively recruited. Demographic, metabolic, glucose, and QOL (SF-36, Problem Areas In Diabetes-Short Form, Hypoglycaemia Fear Survey, Diabetes Treatment Satisfaction Questionnaire [DTSQ]) data were collected at start, 6, 12, and 24 months of standard follow-up. Primary endpoint was evolution of QOL. Secondary endpoints were change in HbA_{1c}, self-reported severe hypoglycaemia and diabetes-related work absence, and number of people who reach clinical CGM consensus targets. Data are mean±SD, least-square mean (95% CI), or n (%).

Results: Of 1906 people who started isCGM, 1577 (83%) used isCGM for at least 24 months. Twelve percent (n=237) discontinued isCGM due to switching to real-time CGM (n=75; 32%), skin irritation or allergy (n=39; 17%), and frequent sensor loss (n=26; 11%). People were 46±15 years old, had T1D for 23±14 years, 22% were using an insulin pump, 16% (n=299) were hypoglycaemia unaware, with HbA_{1c} of 7.8±1.2%. QOL scores were high at baseline and remained stable. DTSQ satisfaction improved from 28.0 (26.1-29.8) to 30.4 (28.6-32.2) ($p<0.0001$), with high self-reported treatment satisfaction (8.5±1.4 on a scale of 10). HbA_{1c} did not change over 24 months. Compared to 6 months before isCGM initiation, fewer people experienced severe hypoglycaemic events needing help from others (17.7% [n=314] vs 9.5% [n=150]; p<0.0001) and hypoglycaemic comas (3.8% [n=67] vs 1.1% [n=18]; p<0.0001) in the 6 months prior to the 24-month time point. The same evolution was observed in number of severe hypoglycaemic events needing help from others (83.1 vs 44.5 events/100 patient-years; p=0.003) and hypoglycaemic comas (9.5 vs 3.0 events/100 patient-years; p=0.009). Additionally, fewer people were absent from work (7.7% [n=134] vs 2.5% [n=39]; p<0.0001) and missed fewer days of work (80.8 vs 35.1 days/100 patient-years; p=0.009). From the first two weeks of isCGM use up to 24 months, more people reached the targets of <4% of time <70 mg/dL (24.0% [n=331] vs 29.5% [n=367]; p<0.0001), >70% of time 70-180 mg/dL (10.4% [n=143] vs 12.0% [n=148]; p=0.046), <25% of time >180 mg/dL (18.5% [n=256] vs 20.1% [n=249]; p=0.025), and <5% of time >250 mg/dL (15.4% [n=212] vs 20.6% [n=254]; p<0.0001). Results are comparable when omitting drop-outs from analyses.

Conclusion: isCGM use over 24 months in a large T1D population increases treatment satisfaction while maintaining other aspects of QOL and HbA_{1c}. The lower prevalence of people who experience severe hypoglycaemia and who miss work, together with more people who achieve the consensus targets for hypoglycaemia and hyperglycaemia indicate that isCGM can be beneficial in long-term diabetes care.

Clinical Trial Registration Number: NCT02898714

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