



Association of British Clinical Diabetologists



ABCD nationwide audit of FreeStyle Libre (FSL)

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ABCD nationwide audit of FreeStyle Libre

Disclosures

- EW has received personal fees from Abbott Diabetes Care, Dexcom, Diasend, Eli Lilly, Medtronic, Novo Nordisk, Sanofi Aventis
- Dr Bob Ryder has received speaker fees, and/or consultancy fees and/or educational sponsorships from AstraZeneca, BioQuest, GI Dynamics, Janssen, Novo Nordisk, Sanofi-Aventis and Takeda

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ABCD nationwide audit of FreeStyle Libre



- **FreeStyle Libre is a flash glucose monitoring system which monitors interstitial glucose levels**
- **Consists of a sensor with a microfilament, worn on the back of the arm and a hand-held reader**
- **When the reader unit is passed over the sensor, it shows the interstitial glucose levels**
- **The sensor lasts for 14 days, then needs to be replaced**

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The ABCD FSL Audit aims to explore the impact of the FSL on the following:

- HbA1c
- Hypoglycaemia awareness
- Resource utilisation: hospital admissions
- User satisfaction
- Diabetes related distress
- Discontinuation rate and causes

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Methods

ABCD nationwide audit of FreeStyle Libre



- Audit conducted in 70 hospitals in UK
- A secure IT tool was developed on the NHS computer network, N3, to make this process as easy and user friendly as possible

ABCD nationwide audit of FreeStyle Libre

The ABCD Nationwide FreeStyle Libre audit is an independent audit supported by an unrestricted grant from Abbott

ABCD Nationwide FreeStyle Libre Audit Pre-FreeStyle Libre Information Collection Form



Hospital Name Centre ID

Date / /

Name of Clinician

Email

NHS Number AFTER PATIENT LABELS HERE

Forename

Surname

Date of Birth / /

Gender Male Female

Ethnicity

White British Irish Any other white background

Asian or Asian British Indian Pakistani Bangladeshi Any other Asian background

Black or Black British Caribbean African Any other

Mixed White and Black Caribbean White Asian Any other mixed background group

Other ethnic group Chinese Any other group Not stated

Driving status Does not drive Standard licence Taxi licence HDV licence

Height (metres) Weight (kg) Body Mass Index Duration of diabetes years months

Type of diabetes

Type 1 Type 2 MODY

During pregnancy: Gestational diabetes Type 1 diabetes during pregnancy Type 2 diabetes during pregnancy

Other (please specify)

PATIENT USE OF FREESTYLE LIBRE

In this assessment:

Recorded prior to commencing FreeStyle Libre? Recorded retrospectively – i.e. after FreeStyle Libre started?

What is the date of FreeStyle Libre start? (best estimate if uncertain) / / If not, intended date of initiation of FreeStyle Libre / /

Use of a CGM within the last 6 months before starting FreeStyle Libre? Yes No **Funding of FreeStyle Libre** NHS funded Non-NHS funded

If non-NHS funded please give details

Professional recommendation Other (please specify)

Patient initiated

continued overleaf

- 📄 Clinicians using FSL were invited to submit the data that they routinely collect
- Forms completed in clinic for later online submission or the online tool could be completed in real time

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Results

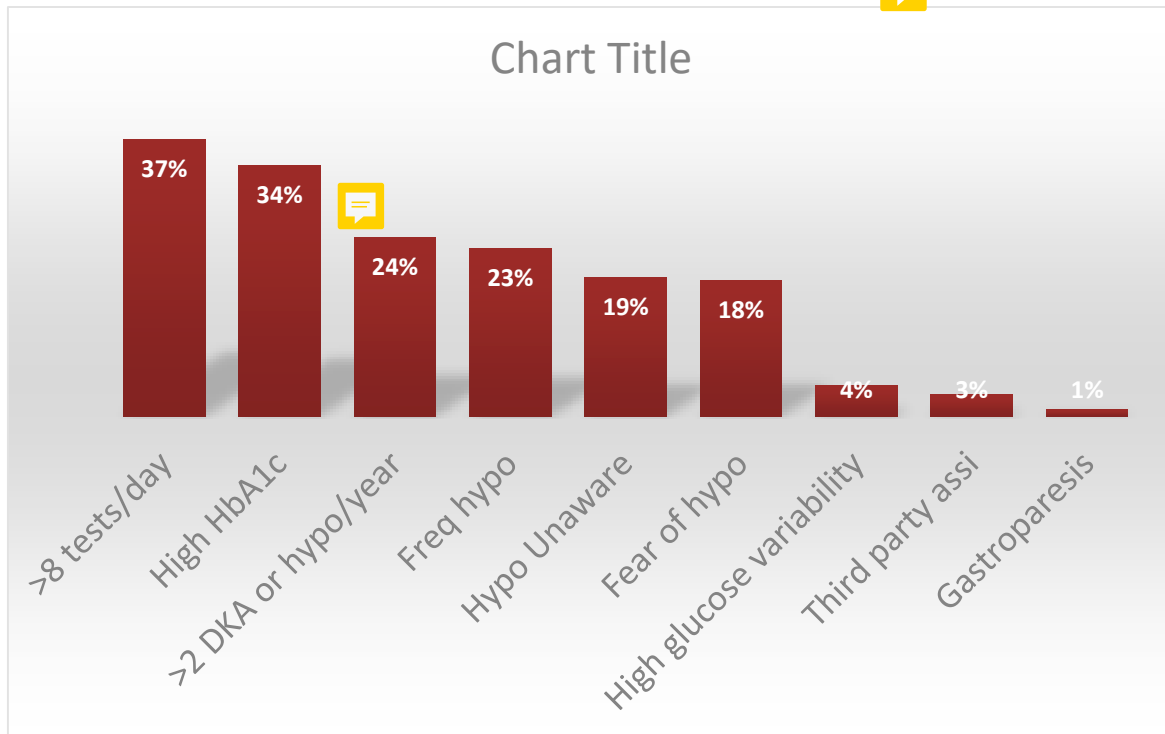
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Demographics and audit characteristics (n=**3,382**)

Age	34 (19-51)
Type 1 Diabetes	96%
Female (%)	54%
Duration of Diabetes (yrs)	14 (5-28)
BMI (kg/m²)	24 (21-28)
HbA1c (mmol/mol)	65 (56-76)
Median HbA1c readings at baseline	2 (1-4)
Median HbA1c readings at follow-up	2 (1-3)
Patients with at least 1 follow-up	715
Median follow-up (months)	6 (1-5)

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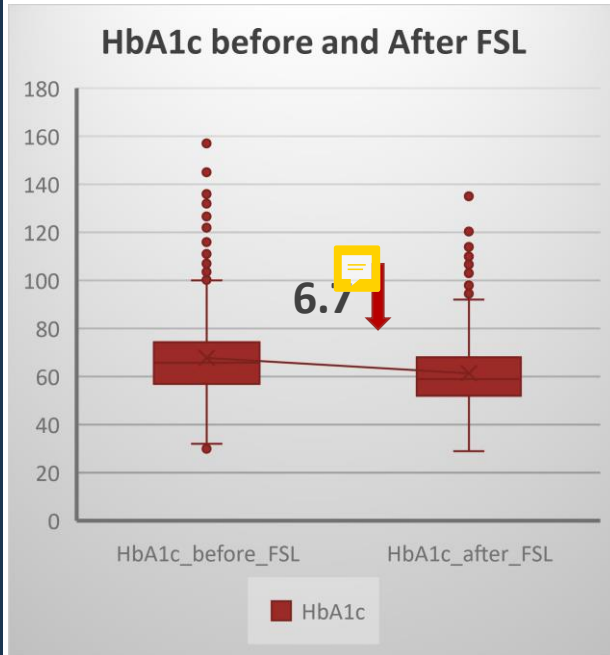
Indications for FSL use in nation-wide FSL audit



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Effect on HbA1c (mmol/mol)

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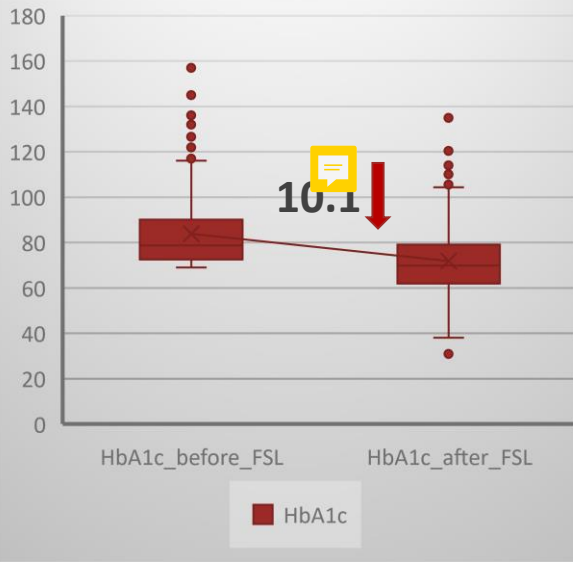


Median pre-FSL HbA1c (IQR)	65.7 (17.1)
Median post FSL HbA1c (IQR)	59 (16)
P-value*	<0.0001

*P-value from Mann-Whitney U Test

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HbA1c before and After FSL baseline >69.5

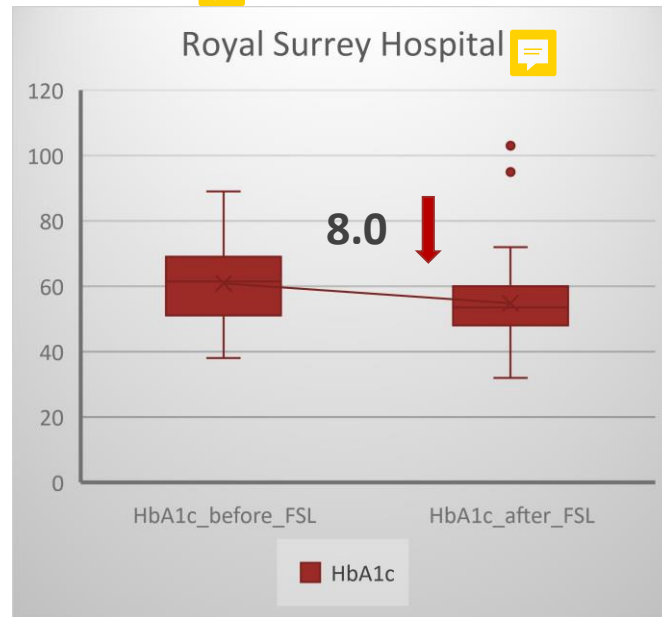
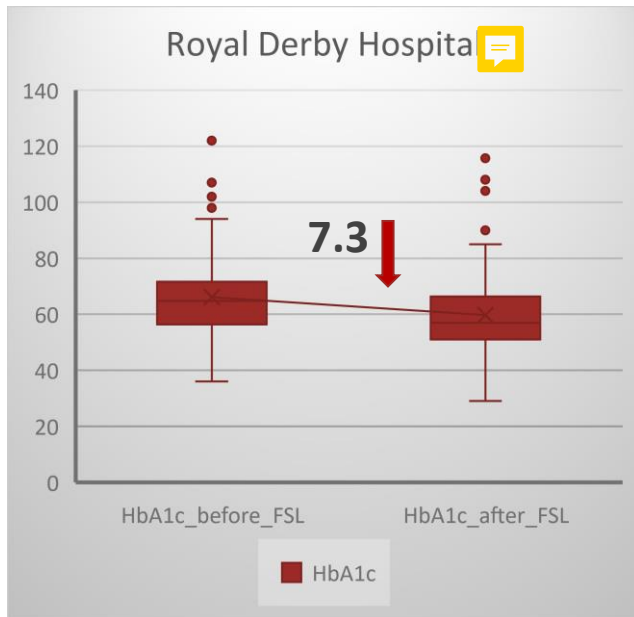


Median pre-FSL HbA1c (IQR)	80.1 (17)
Median post FSL HbA1c (IQR)	70 (17)
P-value*	<0.0001

*P-value from Mann-Whitney U Test

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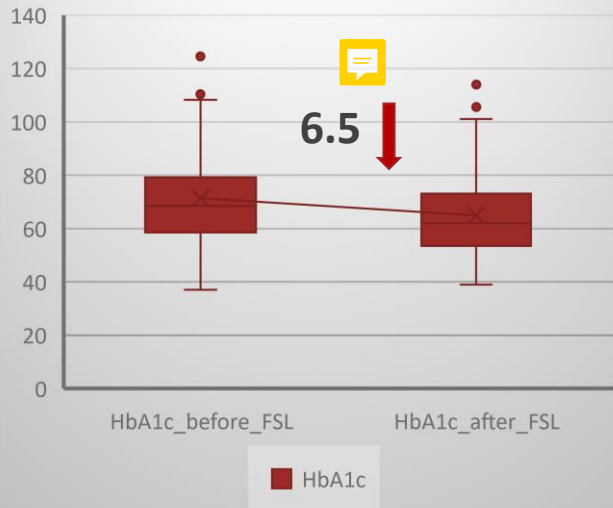
Effect on HbA1c in top contributing centres- analysis stratified by centre



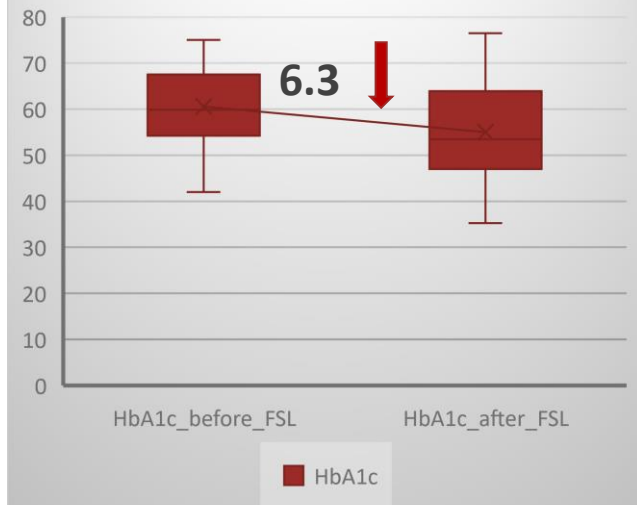
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Effect on HbA1c in top contributing centres- analysed and stratified by centre

Hull Royal infirmary



Salford Royal



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Effect on Hypoglycaemia

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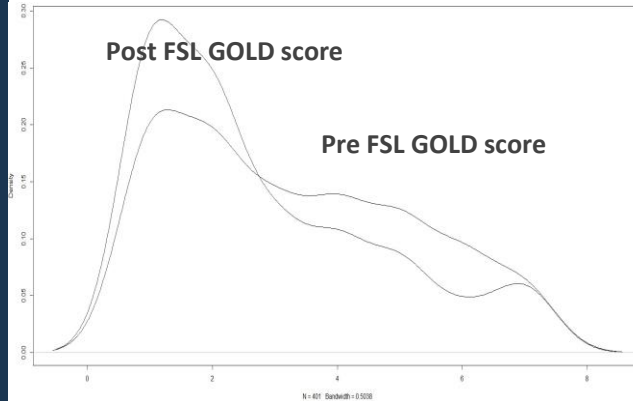
Effect on Hypoglycaemia (GOLD Score*)



*Gold AE, MacLeod KM, Frier BM Diabetes Care 1994

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Effect on awareness of hypoglycaemia (Hypoglycaemia D Score)



Median pre-FSL GOLD (IQR)	3.29 (1.85)
Median post-treatment GOLD (IQR)	2.79 (1.91)
P-value	<0.0001

*P-value from Mann-Whitney U Test

More data needed to see if reversal of hypoglycaemia unawareness

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- **78%** reported that with use of FSL they were able to reduce the proportion of time in hypoglycaemia
- **33%** able to reduce rate of hypoglycaemia
- **32%** had reduced nocturnal hypoglycaemia

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Effect on Hospital Admissions & Diabetes Distress score

- Median Follow-up period of **6** months
- In the 12 months prior to FSL initiation, **5%** reported a hospital admission related to hyperglycaemia/diabetic ketoacidosis; at follow-up this was **1%**

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Diabetes distress score Discontinuation

- Significant improvement in diabetes-related emotional score
- 3 (2-4) at baseline to 2 (1-3) at follow-up
P<0.0001] in both components of brief DDSS
- **1%** patients had discontinued using FSL at 6 month follow-up majority of them because of lack of funding

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User comments

“Improved peace of mind”

“I find my freestyle libre invaluable due to my lifestyle and hill walking. For my sport I could be doing BG tests up to 15 times per day or more.”

“We've had the libre for just over 2 years, it has completely transformed my sons diabetes care. He loves it! Gone are the painful finger pricks 12 times a day, gone are the nights of him being woken by a finger prick, now he can sleep through while I scan him”

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Conclusions


FSL use associated with

- ✓ Significant improvement in HbA1c
- ✓ Significant improvement in Gold Score
- ✓ Possible reduction in hospital admissions due to DKA/Hypoglycaemia and Hyperglycaemia (1 year f/u data awaited)
- ✓ Improved diabetes related distress

Need for more follow-up data to see if beneficial effects are sustained

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Acknowledgements

- Patients 
- Clinicians and support staff at the hospitals
- ABCD