



Association of British Clinical Diabetologists



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## 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
- BR has received speaker fees, and/or consultancy fees and/or educational sponsorships from AstraZeneca, BioQuest, GI Dynamics, Janssen, Novo Nordisk, Sanofi-Aventis and Takeda
- HD TS and CW have no relevant disclosures

### Funding

The ABCD nationwide Freestyle Libre audit is supported by a grant from Abbott UK. The audit was independently initiated and performed by ABCD, and the authors remain independent in the analysis and preparation of this report.

## 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

## **ABCD nationwide audit of FreeStyle Libre**

**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**

## **ABCD nationwide audit of FreeStyle Libre**

# **Methods**

## ABCD nationwide audit of FreeStyle Libre



- Audit conducted in 114 centres in the 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

Forename

Surname

Date of Birth  /  /

Gender ☐ Male ☐ Female

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

## **ABCD nationwide audit of FreeStyle Libre**

# **Results**



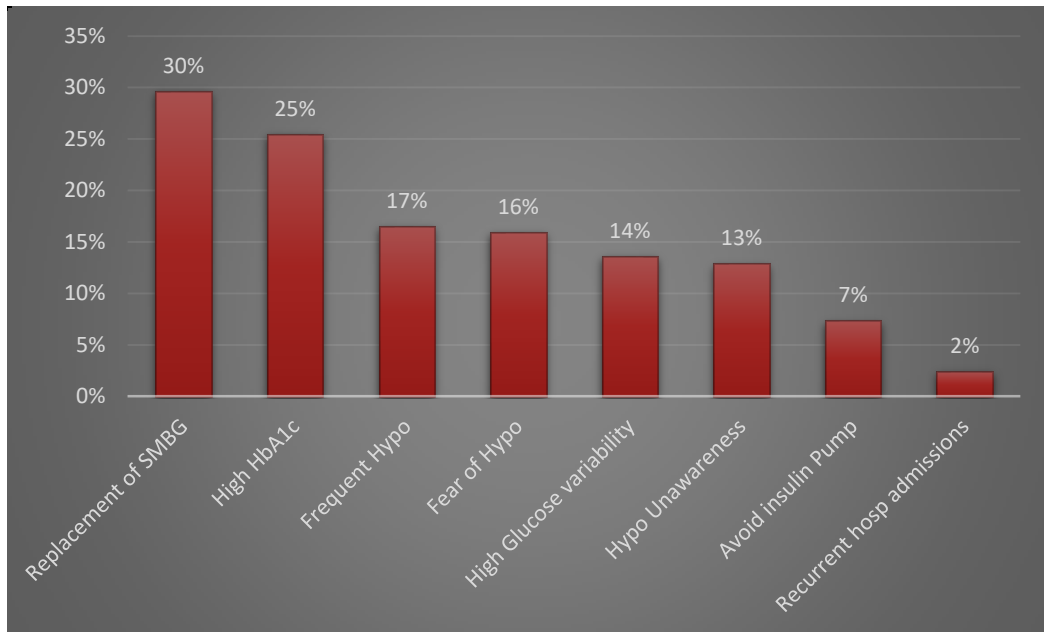
## ABCD nationwide audit of FreeStyle Libre

### Demographics and audit characteristics (n=**4,709**)

Age (IQR)	44 (31-56)
Type 1 Diabetes	99%
Female (%)	54%
Duration of Diabetes (yrs)	20 (11-23)
BMI (kg/m <sup>2</sup> )	26 (23-29)
Baseline HbA1c (mmol/mol)	67 (57-75)
Median HbA1c readings at baseline	2 (1-4)
Median HbA1c readings at follow-up	2 (1-3)
Patients with at least 1 follow-up	<b>1,299</b>
Median follow-up (months)	6 (1-5)

# ABCD nationwide audit of FreeStyle Libre

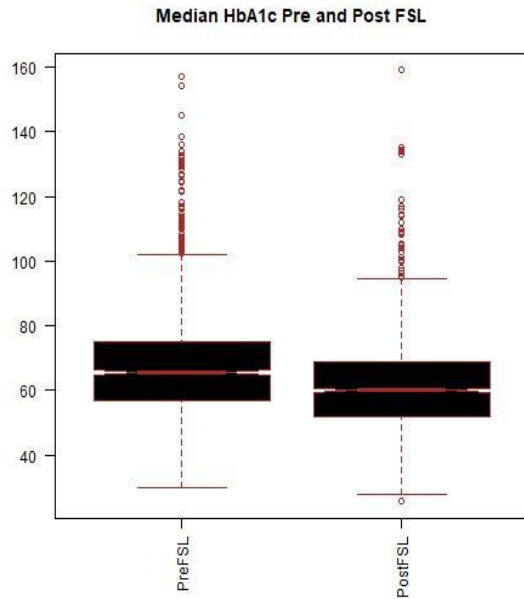
## Indications for FSL use in nation-wide FSL audit



## **ABCD nationwide audit of FreeStyle Libre**

**Effect on HbA1c (mmol/mol)**

# ABCD nationwide audit of FreeStyle Libre



Median pre-FSL HbA1c (IQR)	65.5(18)
Median post FSL HbA1c (IQR)	60 (17)
P-value*	<0.0001

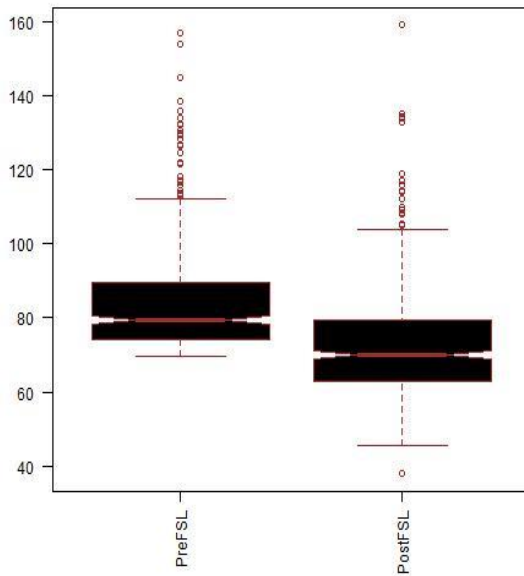


5.5 mmol/mol of HbA1c

\*P-value from Mann-Whitney U Test

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Median HbA1c Pre and Post FSL



Baseline HbA1c > 69.5

Median pre-FSL HbA1c (IQR)	79.5 (15)
Median post FSL HbA1c (IQR)	70 (10)
P-value*	<0.0001



9.5 mmol/mol of HbA1c

\*P-value from Mann-Whitney U Test

## **ABCD nationwide audit of FreeStyle Libre**

### **Effect on Hypoglycaemia**

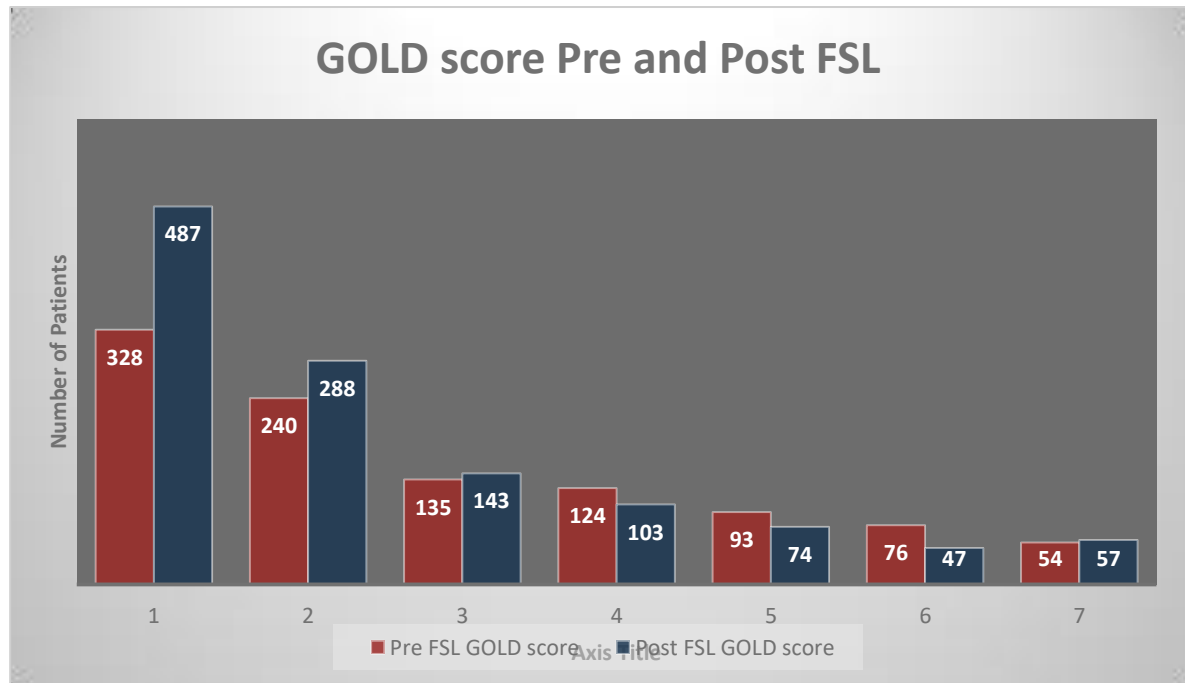
## ABCD nationwide audit of FreeStyle Libre

Effect on Hypoglycaemia (GOLD Score\*)



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

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9% patients reported had reversal of hypoglycaemic unawareness (GOLD score dropped below 4)

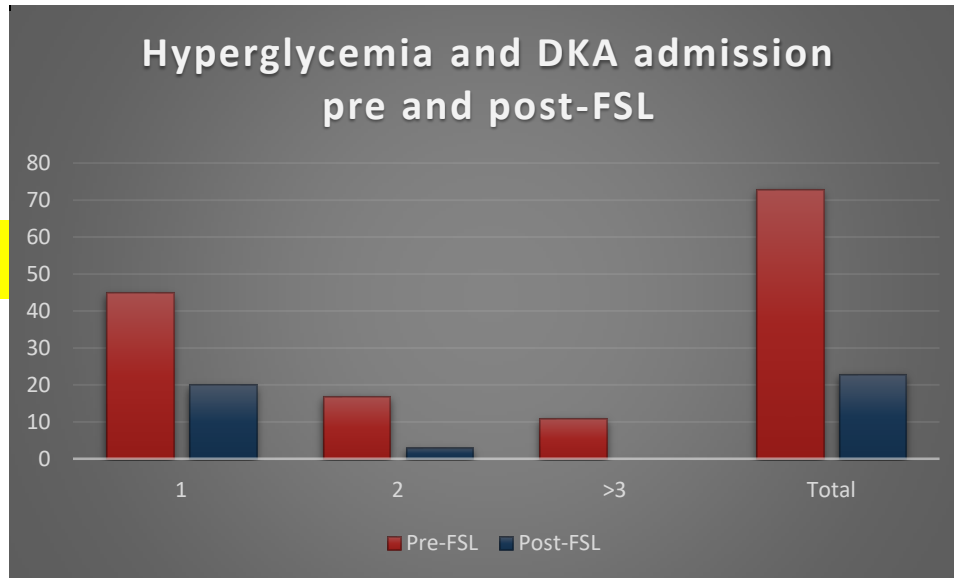


## ABCD nationwide audit of FreeStyle Libre

- **79%** reported that with use of FSL they were able to reduce the proportion of time in hypoglycaemia
- **31%** able to reduce rate of hypoglycaemia
- **39%** had reduced nocturnal hypoglycaemia

## ABCD nationwide audit of FreeStyle Libre

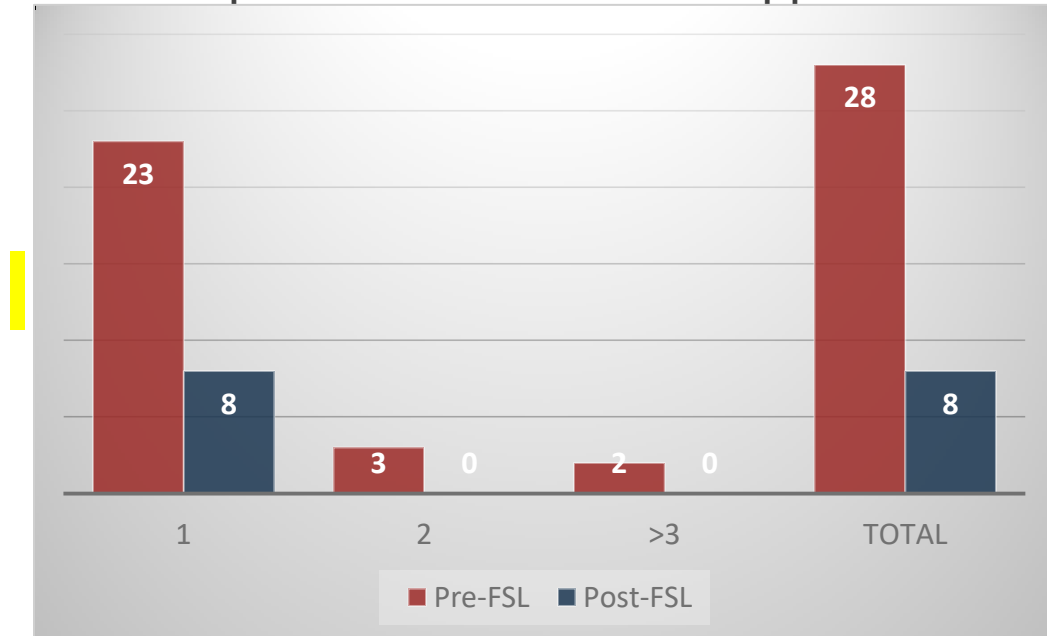
Effect on Hospital Admissions Median Follow-up period of 6 months



Hyperglycaemia and DKA admission dropped from 7.3% to 1.9%

## ABCD nationwide audit of FreeStyle Libre

Effect on Hospital Admissions Median Follow-up period of 6 months



Hypoglycaemia admission dropped from 2.71% to 0.5%

## ABCD nationwide audit of FreeStyle Libre

### 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%** users had discontinued using FSL at 6 month follow-up majority of them because of lack of funding

## ABCD nationwide audit of FreeStyle Libre

### 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”*

## ABCD nationwide audit of FreeStyle Libre

### Conclusions

FSL use associated with

- ✓ Significant improvement in HbA1c
- ✓ Significant improvement in Gold Score
- ✓ Possible reduction in hospital admissions due to DKA/Hypo 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**

## **ABCD nationwide audit of FreeStyle Libre**

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

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## Scotland

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