MCN conference: workshop

Information technology and diabetes

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Several libre slides courtesy of Dr Fraser Gibb
See ECED website
Outline of workshop

• Libre
• Driving
• Continuous Glucose Monitoring
• Scottish Therapeutics Utility (STU) reports
Freestyle Libre

What is Libre
Sensor measures interstitial glucose

What does the Libre tell you?
Differences from finger-prick testing

The 24 hour glucose profile
The trend arrow

What does the arrow mean?
How quickly is your glucose changing?

<table>
<thead>
<tr>
<th>Arrow</th>
<th>What it means</th>
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<tbody>
<tr>
<td>↑</td>
<td>Going up more than 0.11 mmol/L per minute</td>
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<tr>
<td>↑</td>
<td>Going up between 0.06 and 0.11 mmol/L per minute</td>
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<td>Stable</td>
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<tr>
<td>↓</td>
<td>Going down between 0.06 and 0.11 mmol/L per minute</td>
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<tr>
<td>↓</td>
<td>Going up more than 0.11 mmol/L per minute</td>
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If glucose is changing by 0.06 mmol/L per minute this means a change of at least 0.9 mmol/L in 15 minutes and 1.8 mmol/L in 30 minutes.

If glucose is changing by 0.11 mmol/L per minute this means a change of at least 1.7 mmol/L in 15 minutes and 3.3 mmol/L in 30 minutes.
Libre glucose is accurate when compared to blood glucose.
Can you rely on the Libre result for calculating insulin dose?

- 120 people used Libre – 121 used finger-prick glucose for 6 months
- Average number of finger-prick tests fell from 5/day to 0.5/day
- Control remained good and hypos reduced

How often to scan?

What is the right amount?

- Recommend at least 6x a day
- Ask yourself ‘would scanning change what I do?’
- You can always look back to learn lessons from what happened earlier
- Before meals, before bed, after insulin has peaked, before and during exercise
- If you think you’re hypo or at risk of hypo
Over-reacting to highs and lows can result in ‘zig-zagging’ between hypos and highs. Avoid stacking insulin doses and over-treating hypos.
Skin reactions with Libre
How common and how to avoid

- Just under 10% of people in the largest Libre study – severe in 5%
- Since then changes have been made to the sensor
- Often responds to barrier sprays (Cavilon) or zinc ointment / hydrocortisone cream or change in position of sensor
Does it have to be on the arm?
Can it be used on the abdomen?

- Libre is very accurate when assessed against finger-prick testing
- 86% of Libre ARM readings fall within category A (most accurate)
- Only 64% of Libre ABDOMEN readings fall within category A
Finger-prick glucose
When is it still required?

Driving (sometimes)

Hypo

Advice changed Feb 2019
• Approved by formulary committee 8/2/18
• All pts with T1DM written to within 1/12
• First group education session at RIE 21/2/18
What else can we offer?

**DAFNE**
The skills to help control diabetes

DAFNE (Dose adjustment for normal eating) is a comprehensive course designed to equip people with type 1 diabetes with the skills they need to take control of their diabetes. As well as help with carbohydrate counting, the course covers exercise, avoiding hypoglycaemia, what to do during illness and several other useful topics. Feedback from Royal Infirmary patients is highly positive and leaves people feeling positive and empowered to deal with the challenges of living with diabetes.

Find out more at [www.edinburghdiabetes.com/dafone](http://www.edinburghdiabetes.com/dafone)

**diason.**
Reviewing and sharing glucose data

Diason is a system where you can review your glucose results. You may have looked over your readings in the clinic with us using this system. Signing up for Diason at home can help you recognise patterns and help improve glucose control. The system is compatible with most blood glucose meters and also the Libre.

Find out more at [www.edinburghdiabetes.com/diason-rie](http://www.edinburghdiabetes.com/diason-rie)

**my diabetes - my way**
Access to your diabetes hospital records

My Diabetes My Way allows you to access your diabetes clinic letters, test results and other personal clinical details. It is also a source of useful diabetes information provided as leaflets, videos and other educational tools.

Find out more at [www.mydiabetesmyway.scot.nhs.uk](http://www.mydiabetesmyway.scot.nhs.uk)

**eced**
Your clinic website

Our clinic website has a huge amount of information designed to help make managing diabetes easier. This includes video guides on carbohydrate counting and exercise, our 10-steps to improving control booklet and our continuous glucose monitoring booklet.

[www.edinburghdiabetes.com](http://www.edinburghdiabetes.com)
Getting Libre on prescription

What you need to do

1. Use intensive insulin therapy (multiple daily injections [typically 4 or more] or insulin pump); and
2. Agree to attend a locally provided Freestyle Libre education session; and
3. Agree to scan glucose levels no less than six times per day; and
4. Agree to share glucose data with their diabetes clinic;
5. Have attended a recognised diabetes structured education programme. And/or clinical team are satisfied that the person has required knowledge/skills to self-manage diabetes.

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How to access Libre Quiz
Link on website

http://www.edinburghdiabetes.com/startlibre

What next - now that you’ve started using Libre?

If you are having technical problems with your Libre (sensors falling off early / inaccurate sensors etc.) please contact Abbott Customer Care: 0800 170 1117 - your GP / Diabetes clinic cannot help with these matters.

If your problems relate to difficulties using the Libre, understanding the results or for general advice on improving diabetes control, please contact the diabetes nurse specialists (RIE: 0131 242 1470 or 1471).

All the educational resources available further up this page should be of value in helping troubleshoot.

We have also produced a ‘Libre Quiz’ with a series of practical scenarios and advice on what to do when you encounter them - please click here to access the Libre Quiz.
What, if anything, would you have done differently?

a) No change
b) Increase dose of bolus insulin by 10%
c) Decrease dose of bolus insulin by 10%
d) Take bolus dose earlier before meal
e) Take bolus dose later after meals
Freestyle Libre - benefits

Lothian adult type 1 HbA1c data in first 1 quarters of 2018.

Lothian HbA1c data relative to all other Scottish centres – improvement since introduction of Libre (we were first health board to introduce widely)

KEY
075 RIE
076 ELCH
077 SJH
078 WGH
131 LCTC
Freestyle Libre - benefits

Q1/19 - HbA1c comparison by centre

075 - Royal Infirmary, Edinburgh (Lothian)

076 - East Lothian Community Hospital (Lothian)

077 - Department of Diabetes, St John's Hospital (Lothian)

078 - Department of Diabetes WGH (Lothian)

131 - Edinburgh Health & Social Care Partnership (Lothian)
RIE type 1 clinic average HbA1c. The increase in good HbA1c and reduction in bad HbA1c is almost certainly attributable to Libre as there have been no other changes in the system.
Figure 1: Change in HbA1c category pre- and post-FM use. McNemar test for change in both <58 mmol/mol and >75 mmol/mol category: $P < 0.0001$.

Observational data from first 900 patients at RIE and WGH to go onto libre
Figure 2: Relationship between baseline HbA1c and subsequent change in HbA1c following FM. Spearman R = -0.479, P < 0.0001.

Figure 3: Effect of exposure to FM upon mean HbA1c trajectory. P < 0.001 for mixed effects model assessing interaction of time and FM category upon log-transformed HbA1c. Paired t-test comparing log-transformed HbA1c between 2016 and 2018: No Libre P = 0.931; NHS Libre after Mar 2018 P = 0.003; NHS Libre Feb/Mar 2018 P < 0.0001; Previous self-funded and NHS Libre Feb/Mar 2018 P < 0.0001.
Libre and driving

• As of 14/2/19, patients can use their libre readings to fulfil DVLA requirements if they have a group 1 (ordinary) driving licence
• Still need to do capillary test if libre glucose level < 4.0 mmol/L, if they have hypo symptoms or if libre gives a reading that is inconsistent with their symptoms
• Bus and lorry drivers are NOT allowed to use libre readings
• Patients using libre sensors therefore still require blood glucose test strips on prescription, but may not be required often
• Abbott no longer provide free test strips
• Libre reader can be used as BG meter (takes Abbott test strips)
• But if patient uses their phone rather than the reader, no reason to stick to Abbott strips (although Freestyle Optium and Libre reader can check ketones)
Continuous Glucose Monitoring
Scottish Government funding

- Much more expensive
- Reads continuously, without need to scan
- Can link to pumps with some cross-talk
- ~£2500 for CGM and same each year for consumables (vs Libre £150 start up cost + £840 p.a.)
- Libre sensors: cost neutral for people testing ~7x daily
- SG funding for 24 CGM last year – prioritise severe hypos and young children
Scottish Therapeutics Utility

STU reports

- STU is a computer programme that interrogates GP clinical systems (EMIS and Vision)
- Populates interactive dashboard and standardised reports on prescription items issued by an individual practice
- STU can help identify patients who may benefit from medication review
- STU is licensed by the Effective Prescribing and Therapeutics branch of SG and is available to practices free of charge
Scottish Therapeutics Utility

STU reports

- 4 specific diabetes reports
  1. SU in frail patients – can identify patients in different age bands
  2. Polypharmacy in diabetes. Identifies patients prescribed 3 or more diabetes meds. Breakdown by No of meds (3+, 4+, 5+)
  3. Long acting insulins in type 2s. Anyone with T2D prescribed a long acting insulin analogue (detemir and glargine)
  4. Self-monitoring of blood glucose (SMBG) in type 2. Anyone with T2D, prescribed SMBG AND on either no medicine, or only metformin
Discussion/questions