
The work of the DSN.....!

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Diabetes Specialist Midwife

12th November 2021



DSN (Practitioner) role.

- Just some aspects taken from Job description
 - To provide specialised services to people with diabetes across NEE and wider localities as defined by service needs
 - Work with Primary care colleagues to provide expert advice and care planning
 - Develop skills in carbohydrate counting and insulin titration
 - Recommend changes to medication in line with competency based guidelines
 - To deliver structured patient education
 - Ensure own practice is up to date and evidence based
- Plus
 - Competence and confidence using technology
 - Be able to interpret continuous glucose readings and make recommendations for change to improve readings
 - Know most phone devices and help person get connected!!!
- Sometimes just be someone for them to talk to!!

Keep it simple!

Support through Lockdown

Very challenging for all

First Lockdown, all the DSN staff within NEEDS were relocated to the wards

Left a few of us to manage all phone calls/ video calls

NEEDS caseload is currently 1007, plus 650 on education referral pathway .

The patients wanted to talk, they needed company, hard trying to be concise and to the point

- Waiting lists for education started lengthening- OUR DSDs developed education that could be presented through MS Teams – T2 on Insulin and T1 carbohydrate counting
- Remote DAFNE developed- we were a pilot site, again using MS Teams
- Admin would hold little sessions with patients to ensure able to get onto Teams etc
- Online learning and MS teams continue, only now starting to introduce some F2F, as not all patients can cope with technology
- September 2020 onwards, ward based DSNs extremely busy! Dexamethasone as treatment for Covid and **unprecedented** number of newly diagnosed Type 1 patients



Freestyle Libre.

- This has been amazing!
 - Type 1 patients only, guidance from CCG who can have on prescription
 - Been available for approx. 4 years
 - Specialist service initiation, then on prescription 2 sensors/ month
 - Test strip prescription normally 200/ 250/ month, now reduced to 50/ month

- Getting started
 - Prior to lockdown, Abbott representative would hold F2F sessions lasting about an hour, every 2 months
 - Changed to virtual and now a mix of virtual and F2F
 - Prefer patients to be carb counting, attended DAFNE, so know about dose adjusting, also option of Abbott, Libre academy
 - Must be on MDI
 - Sign agreement to use appropriately and audit commenced
 - Patients followed up at 1m, 3m and 6m post start date

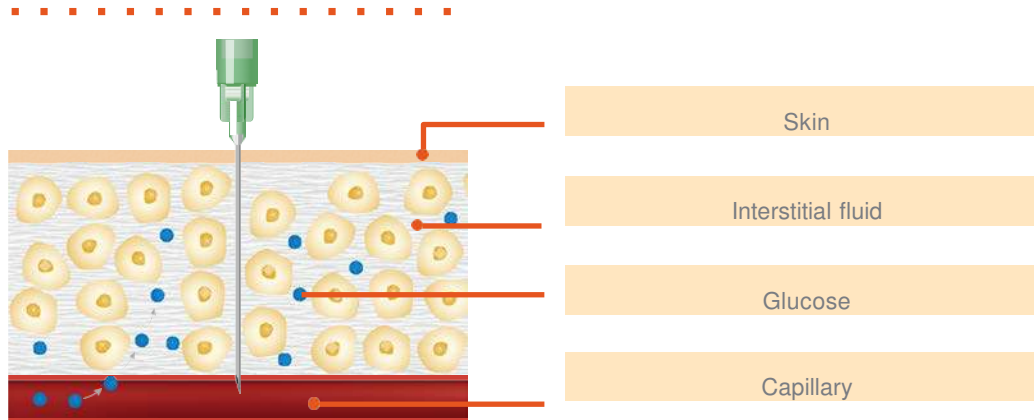
Freestyle Libre Flash Glucose Monitoring system



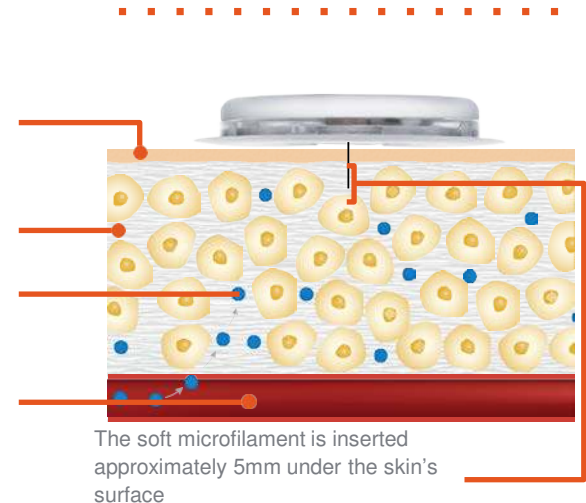
Understanding Interstitial Glucose Measurement

The FreeStyle Libre system measures glucose in the interstitial fluid. Blood glucose and sensor glucose are closely related but not identical. The glucose measured by the FreeStyle Libre sensor has made its way from the blood into the interstitial fluid under the skin of the upper arm. This takes a little time and so the sensor glucose reading always lags behind a finger prick blood glucose reading by about 5-10 minutes.¹

CLASSIC CAPILLARY
BLOOD GLUCOSE METER



FLASH GLUCOSE
MONITORING SYSTEM

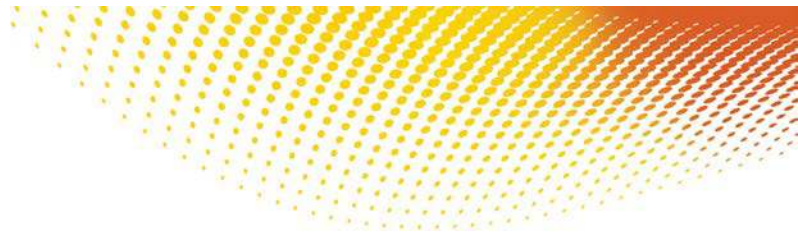


1. Rebrin K, Sheppard NF Jr, Steil, GM. Use of subcutaneous interstitial fluid glucose to estimate blood glucose: Revisiting delay and sensor offset. J Diabetes Sci Technol. 2010;4(5): 1087-1098.

FreeStyle, Libre, and related brand marks are trademarks of Abbott Diabetes Care, Inc. in various jurisdictions.

ADCMDP190076 – Date of preparation: June 2019.

Notes



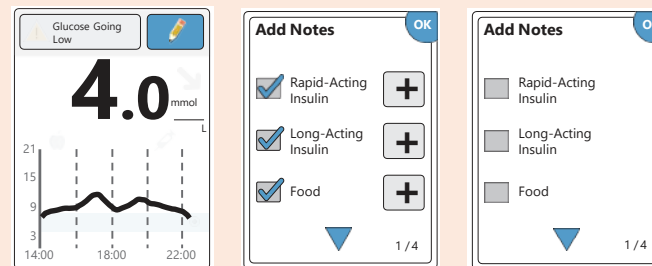
Adding notes may provide further insights into your glucose readings to help you manage your diabetes

Note: if scanning with the reader this needs to be within 15 mins of the scan

From the Glucose Reading Screen you can easily record your activities, if you choose to by pressing add note at the bottom of the screen.



From the Glucose Reading Screen you can easily record your activities, if you choose to by pressing the pencil at the top right hand side of the screen.



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How you will see the information on LibreView^{1,2}

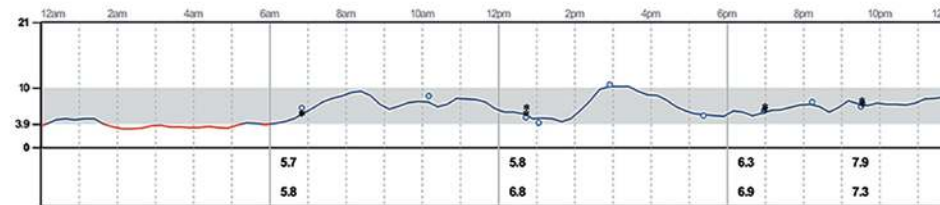
Daily Log

18 March 2018 - 31 March 2018 (14 days)

LibreView

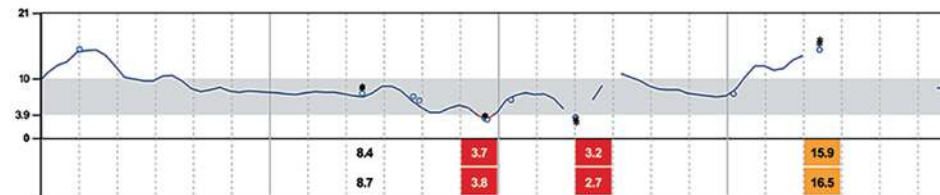
TUE 18 Mar

Glucose mmol/L



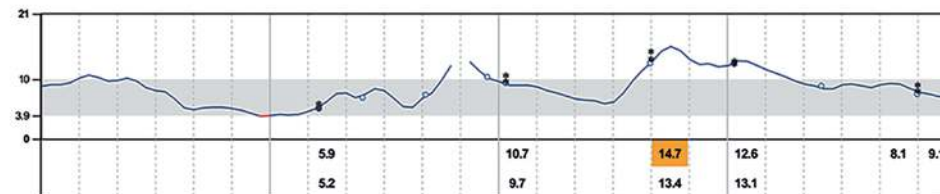
WED 19 Mar

Glucose mmol/L



THU 20 Mar

Glucose mmol/L



Legend High Glucose (>13.9) Low Glucose (<3.9) Sensor Scan Logged Post-Meal Peak New Sensor Time Change 17.0u±2.0+0.0 15.0u Meal + Correction + User Change = Total Ket Ketones Test Strip Test

Simulated data for illustrative purposes only. Not real patient or data.

1. LibreView is developed and distributed by Newyu, Inc. 2. You need to make sure you are scanning the sensor at least once every 8 hours to prevent gaps in the data appearing.

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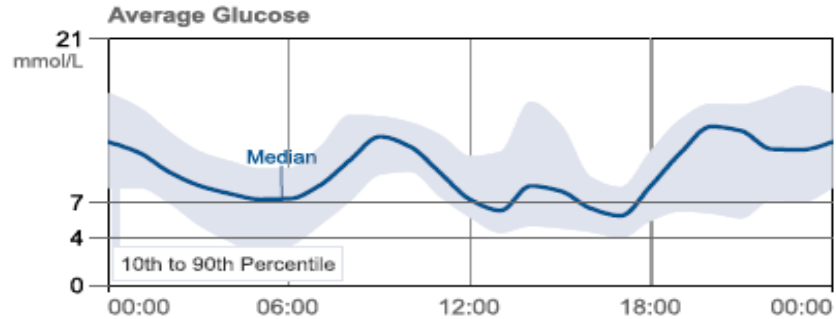
ADCMDP190076 – Date of preparation: June 2019.

Abbott
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Glucose

Estimated A1c **7.6%** or **60 mmol/mol**

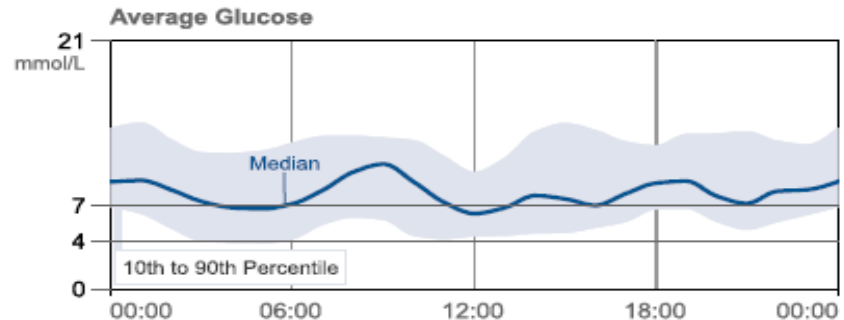
AVERAGE GLUCOSE	9.5 mmol/L
% above target	73 %
% in target	21 %
% below target	6 %

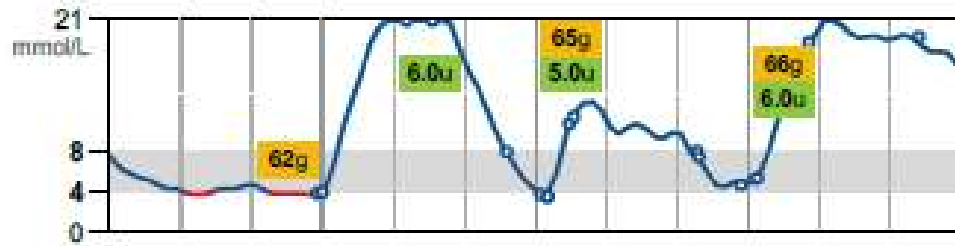





Glucose

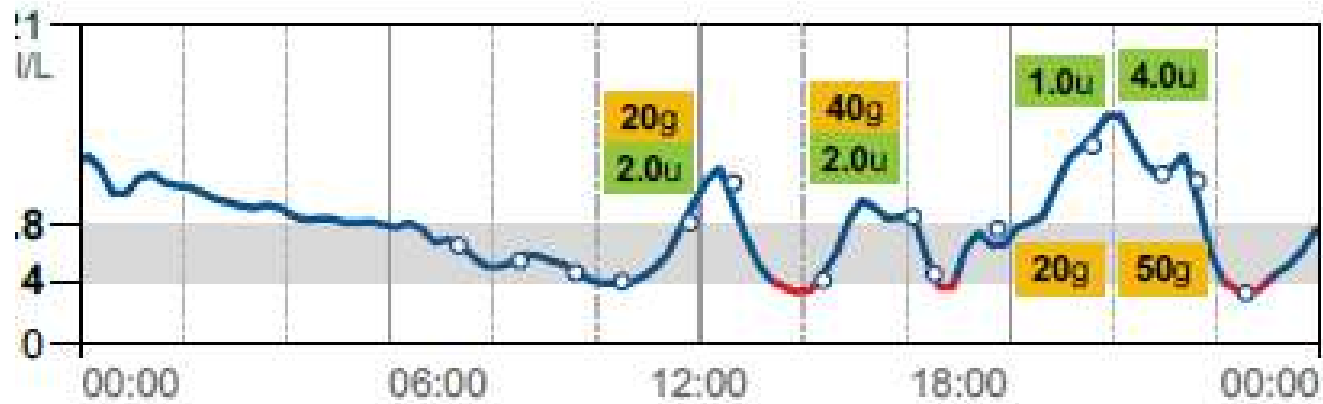
Estimated A1c **7.0%** or **53 mmol/mol**

AVERAGE GLUCOSE	8.6 mmol/L
% above target	62 %
% in target	34 %
% below target	4 %





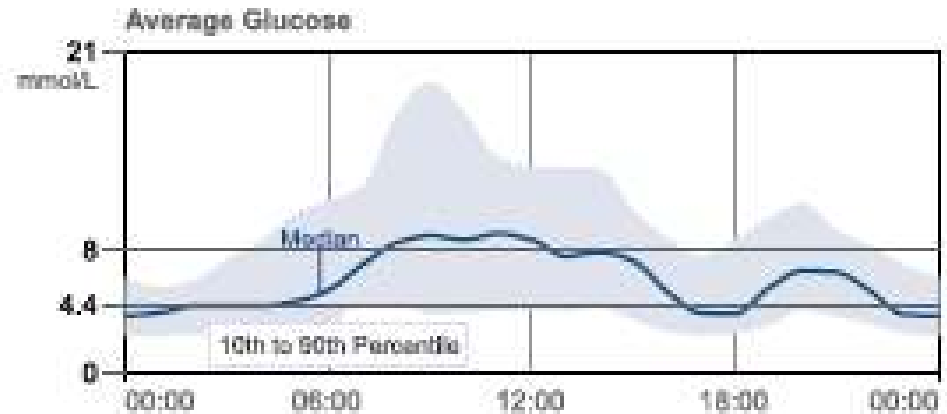
			
11.2 mmol/L	193 grams	17.0 units	



Glucose

Estimated A1c **5.8% or 40 mmol/mol**

AVERAGE GLUCOSE	6.6 mmol/L
% above target	28 %
% in target	37 %
% below target	35 %



LOW-GLUCOSE EVENTS	21
Average duration	202 Min



Snapshot

30 January 2017 - 12 February 2017 (14 days)

Glucose

Estimated A1c **6.4% or 46 mmol/mol**

**AVERAGE
GLUCOSE** **7.6** mmol/L

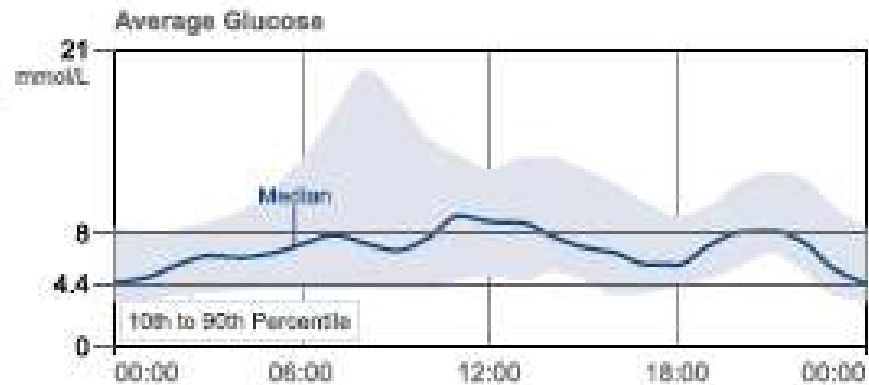
% above target **37** %

% in target **46** %

% below target **17** %

**LOW-GLUCOSE
EVENTS** **8**

Average duration **146** Min



Other causes of hypos



The right tissue space



Insulin must be injected into subcutaneous fat layer for predictable and stable absorption¹⁵



Subcutaneous Fat Injection:
Consistent insulin absorption

IM deposition leads to accelerated absorption and increased risk of hypoglycaemia¹⁶



IM Injection:
Variable insulin absorption



Liphypertrophy

Insulin **Lipohypertrophy**: localised 'hypertrophy' of subcutaneous fat at insulin injection sites, caused by Micro trauma and the lipogenic effect of insulin.



The burden of Lipo



49% of patients with lipo have glycaemic variation, compared to only 7% of patients without lipo.⁸



39% of patients with lipo have unexplained hypoglycaemia, compared to 6% of patients without lipo.⁸



Delayed insulin uptake



8. Blanco, 2013



What can you advise to help?

- Stop needle reuse (increased micro trauma, pain, needle blockage, needle breakage)
- Stop injecting into Lipo
- Advise site rotation
- You can consider measuring Lipo & marking on the skin to highlight to patient, also allowing monitoring progress of size changes.
- Advise only to inject into healthy tissue

*** There is increased risk of **hypoglycaemia** when moving away from lipo tissue and injecting into healthy tissue. Patient should be made aware of this risk and reiterate hypo symptoms & treatment. Also consider an initial insulin dose reduction if very large lipos / higher risk hypoglycaemia. Dose guided by daily BG monitoring***



Sick day rules

This is discussed with all Type 1 patients and covered in detail when they attend Dafne

The purpose is to prevent them from developing Diabetic Ketoacidosis (DKA)

- Need blood glucose meter which can also test for ketones
- To ensure have in date test strips
- Blood ketones rather than urine ketones
- Urgent prescription for more if required

Guide to frequency of testing for ketones

- If BG level $>17\text{mmol/l}$
- If 2 consecutive readings 4 hours apart $>13\text{mmol/l}$
- Feel unwell
- Test for ketones 4hourly if blood ketone 0-0.6
- To test 2 hourly if >0.6
- Correction dose dependant on level of ketones
- Drink minimum 100mls every hour

Insulin.

- Quick acting (Bolus for meals)
 - NovoRapid, Fiasp
 - Humalog (100u and 200U/ ml), Lyumjev
 - Apidra
 - Bolus Similar!

- Slow acting (Basal/ background)
 - Twice a day- Levemir, Insulatard, Humulin I
 - Once a day- Lantus, Basal Similar, Toujeo (300U/ ml)[pen type Solo/ Double star], Tresiba (100 and 200U/ ml)

- Mixed insulins
 - Humulin M3, Humalog Mix 50
 - NovoMix 30
 - Plus others!!!

Pregnancy

Important to have pre-pregnancy planning

- Are the medications already taking safe????
- Not too much of a problem for Type 1 women but maybe if Type 2

What needs to be checked

- Medication for blood pressure
- Taking a statin
- Metformin plus others!!
- Folic acid 5mg oral tablet daily
- Blood glucose readings
- Renal function
- Eye screening

During pregnancy

- **Type 1**
 - Offered RT CGM/ Flash
 - Insulin requirements increase dramatically
 - 2 weekly support as minimum
 - Will need temporary additional insulin supplies

- **Type 2**
 - Maybe diet managed initially
 - Will definitely need metformin and/ or insulin
 - Offer Flash when on MDI
 - 2 weekly support as minimum

Summary

There are a lot of diabetes medications available!

- Try to get the right one for the right person
- Are they are going to take it?
- Too many side effects!
- Do they know someone taking a medication and they want the same!
- Find out what someone's eating habits are, some regimes better suited than others!
- Are they planning a pregnancy? May not be a choice!
- Injection technique and site rotation!!