

CASE BASED DISCUSSION

PREGNANCY



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Leeds
Pregnancy
Research

CASE 1



- 28 year old nurse
- T1DM - since age of 4
- Hypothyroidism - aged 22
- PCOS

- Omnipod pump - TDD 36 units (20 basal; 16 bolus)
- Thyroxine 150 mcg od
- Folic acid 5mg od

- Planned pregnancy (attended preconception clinic + IVF)
- Presented ~4/40 gestation
- HbA1c 42 mmol/mol
- BMI 22
- TFTs normal. TSH<2.0
- ACR and BP - normal; Background retinopathy; Hypo aware

- Using Freestyle Libre iCGM

CASE 1



- Uneventful pregnancy
- Maintained tight glucose control throughout
- HbA1c 39 mmol/mol at 28/40
- TDD 48 units (22 basal; 26 bolus)
- Retinal screening – unchanged

- Fetal growth scans
- ACR 95TH centile (GROW) at 28 and 32 weeks

CASE 1



- 35/40
- Increasing number of hypos
- TDD – reduced over past week to 30 units (>30%)
- Yesterday not needing any insulin bolus, snacking all time to keep BG up

Glucose

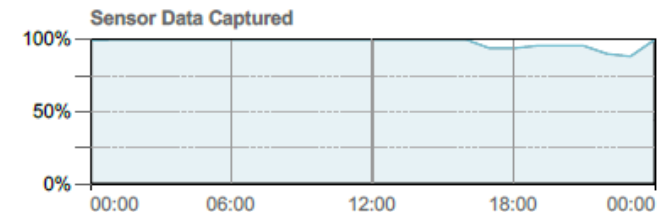
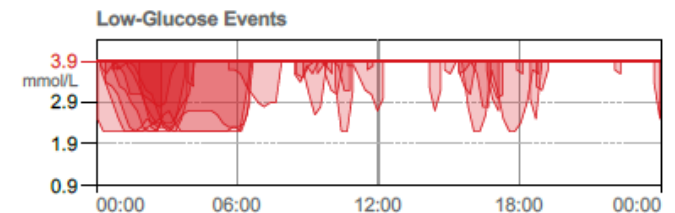
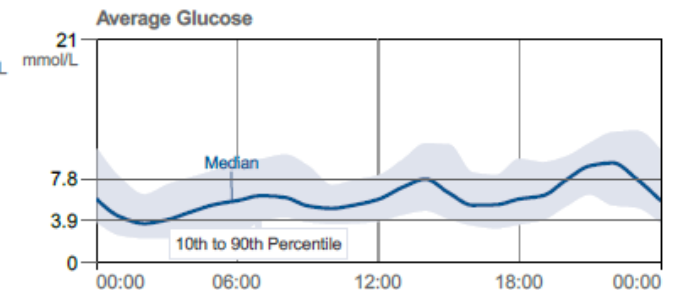
Estimated A1c **5.6% or 38 mmol/mol**

AVERAGE GLUCOSE	6.3 mmol/L
% above target	26 %
% in target	56 %
% below target	18 %

LOW-GLUCOSE EVENTS	29
Average duration	126 Min

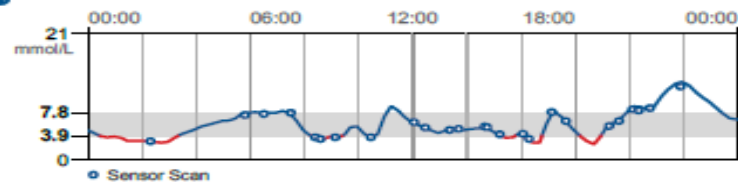
Sensor Usage

SENSOR DATA CAPTURED	100 %
Daily scans	22



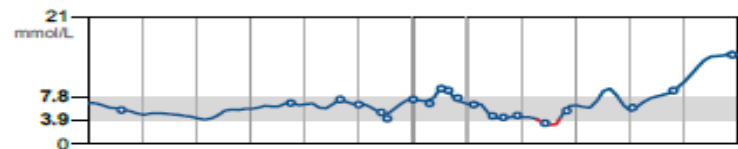
Glucose

Fri
11 Jan



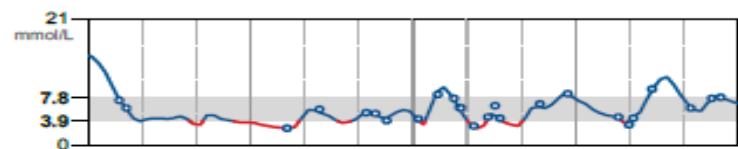
Average
Glucose
5.9
mmol/L

Sat
12 Jan



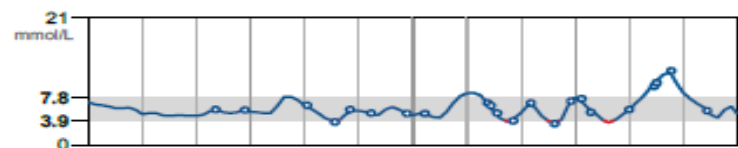
Average
Glucose
6.6
mmol/L

Sun
13 Jan



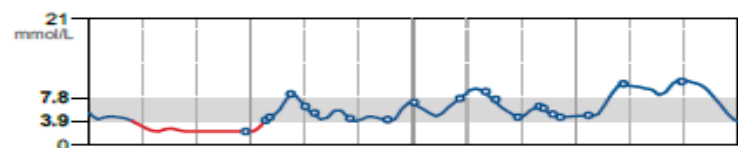
Average
Glucose
5.7
mmol/L

Mon
14 Jan



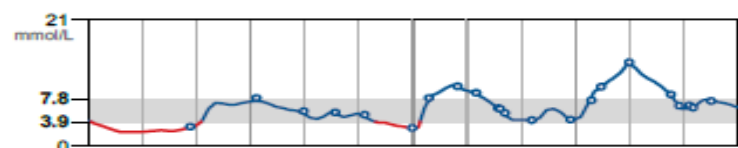
Average
Glucose
5.9
mmol/L

Tue
15 Jan



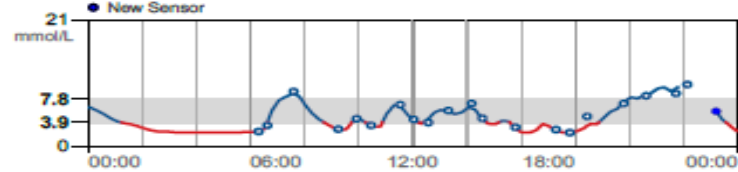
Average
Glucose
5.6
mmol/L

Wed
16 Jan



Average
Glucose
6.1
mmol/L

Thu
17 Jan



Average
Glucose
4.5
mmol/L

CASE 1



What might be going on?

- Placental insufficiency
- Natural dip in insulin requirements at end of pregnancy
- Addisons

What would you do?

What I did

- Previously looked after her for ~2 years, plus fortnightly during pregnancy.
- Looked ill – tired, grey brown skin
- Palmar crease and buccal pigmentation
- Increased pigmentation in scars
- She was adamant this was normal for her!
- D/W Obstetrics Consultant
- Admitted to hospital
- Short Synacthen test
- Commenced Hydrocortisone

CASE 1



Short Synacthen test

0 min cortisol = 436 nmol/l

30 min cortisol = 575 nmol/l

- Maintained her on Hydrocortisone 10 mg/ 5mg/ 5mg
- Hypos resolved, felt better
- Given steroids for fetal lung maturation
- Close fetal monitoring - dopplers

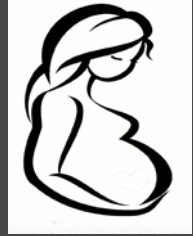
- Induction of Labour at 36+5/40

CASE 1



- Hydrocortisone increased for IOL (100mg IV tds)
 - Complicated delivery - forceps
 - Baby boy – LGA (birthweight 4280g at 36+5/40)
 - Shoulder dystocia
 - 3rd degree tear
 - Post partum haemorrhage
-
- 6 weeks postnatally
 - Repeat SST – all cortisol undetectable <50 nmol/l
 - ACTH = 62ng/l (<47)
 - Plasma Renin Activity = 19.3 nmol/l/h
 - Adrenal Antibodies – strongly positive

ADDISON'S PRESENTING IN PREGNANCY



- Rare
- Previously described presenting as adrenal crisis, with severe vomiting, weight loss and hyperpigmentation associated with hypotension, hyponatraemia and dehydration.
- SST can be normal in early stages of disease
- Notoriously difficult to interpret in pregnancy with huge increase in CBG secondary to increase in oestradiol levels

CASE 2



- 21 year old call centre worker
- T1DM - since age of 19 under c/o paediatrics
- Omnipod pump - TDD 28 units (14 basal; 14 bolus)
- Unplanned pregnancy
- Presented ~15/40 gestation
- HbA1c 101 mmol/mol
- BMI 21
- ACR and BP - normal
- No retinopathy
- Hypo aware

CASE 2



- BMI 20
- ACR normal, no retinopathy, has hypo awareness, TFTs normal.
- Risks and implications of diabetes on pregnancy discussed.
- Importance of improving glucose control.
- Hypo management and hypo unawareness issues in pregnancy discussed
- Freestyle Libre iCGM started
- DSN and dietitian reviewed all diabetes management
- FU 1/52

Glucose

AVERAGE GLUCOSE **8.1** mmol/L

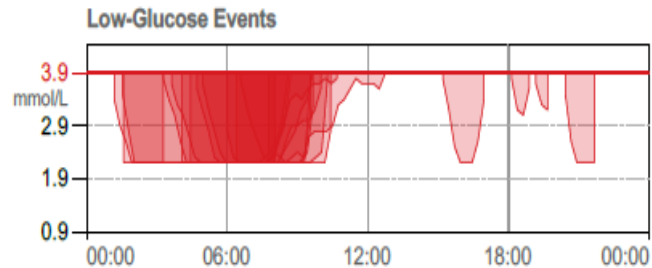
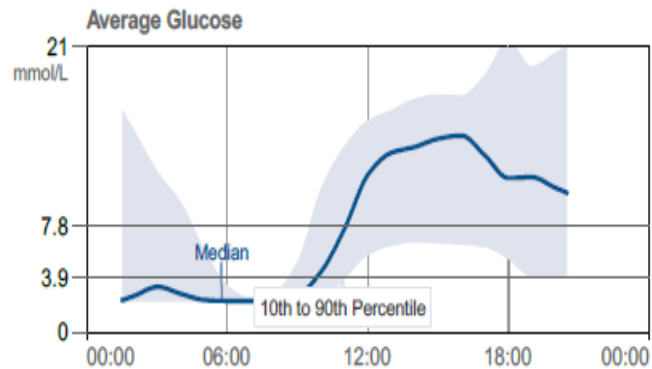
% above target **44** %

% in target **15** %

% below target **41** %

LOW-GLUCOSE EVENTS **17**

Average duration **261** Min



Logged Carbs

DAILY CARBS _____ grams/day

Logged Insulin

Rapid-Acting Insulin _____ units/day

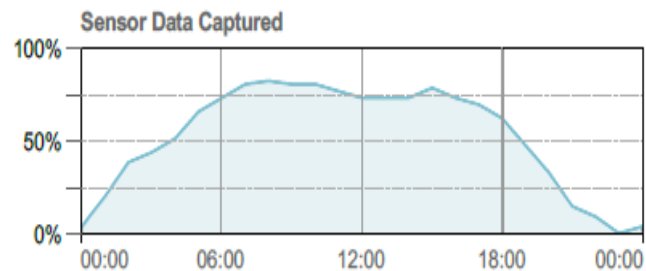
Long-Acting Insulin _____ units/day

TOTAL DAILY INSULIN _____ units/day

Sensor Usage

SENSOR DATA CAPTURED **55** %

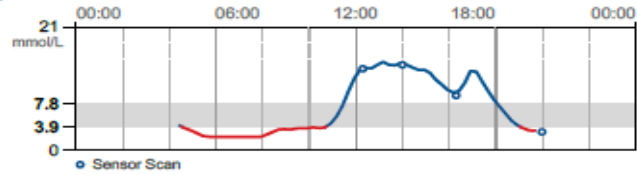
Daily scans **3**





Glucose

Fri
15 Mar



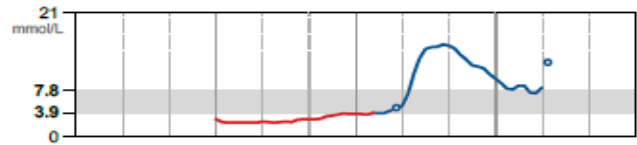
Average
Glucose
7.4
mmol/L

Carbs

Rapid-Acting
Insulin

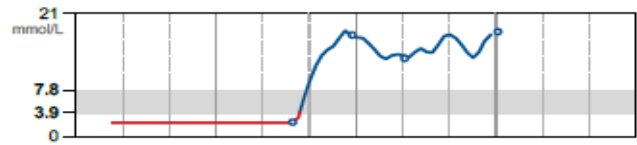
Long-Acting
Insulin

Sat
16 Mar



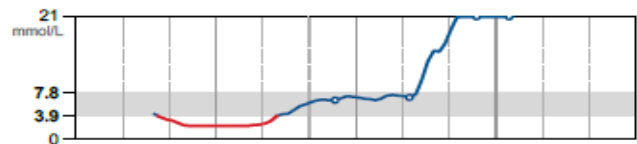
Average
Glucose
6.5
mmol/L

Sun
17 Mar



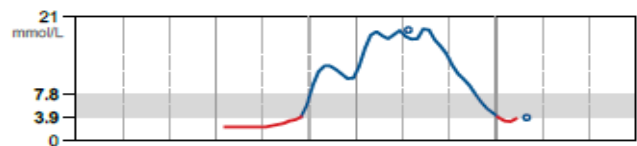
Average
Glucose
8.5
mmol/L

Mon
18 Mar



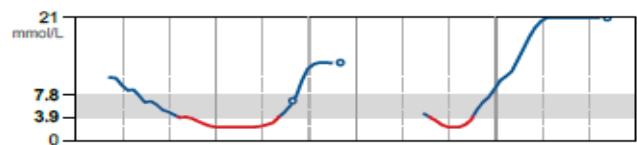
Average
Glucose
8.6
mmol/L

Tue
19 Mar



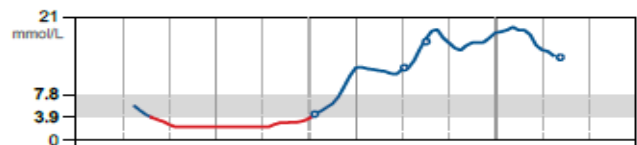
Average
Glucose
9.6
mmol/L

Wed
20 Mar



Average
Glucose
9.1
mmol/L

Thu
21 Mar



Average
Glucose
9.3
mmol/L

CASE 2



- What's going on?
- Pattern of marked nocturnal hypos
- Hyperglycaemic throughout day
- Hypo unaware overnight
- Pump TDD 38 units (22 basal; 16 bolus)
0.5u/hr 00.00-12.00; 1.5 units/hr 12.00-24.00
- Says stressed at work during day in call centre
- Looks like needs alarmed CGM system
- Cut overnight basal insulin and increase basal rates during day
- FU 1/52

Glucose

Estimated A1c **6.9% or 52 mmol/mol**

AVERAGE GLUCOSE **8.4** mmol/L

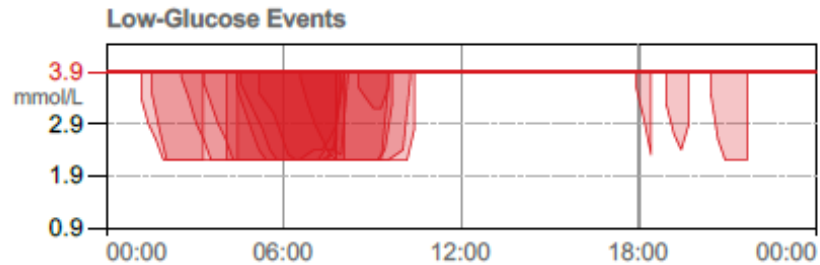
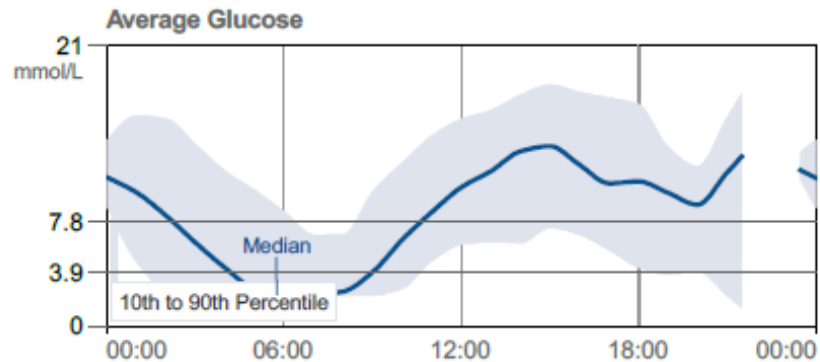
% above target **51** %

% in target **23** %

% below target **26** %

LOW-GLUCOSE EVENTS **15**

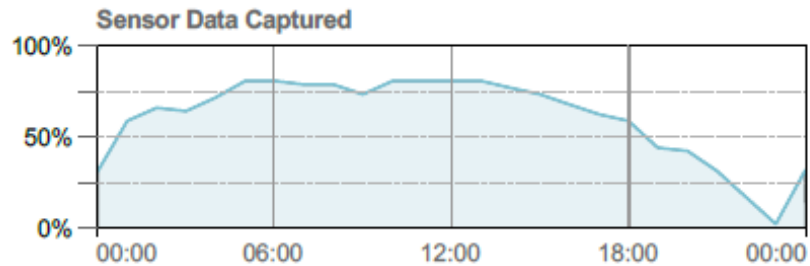
Average duration **207** Min



Sensor Usage

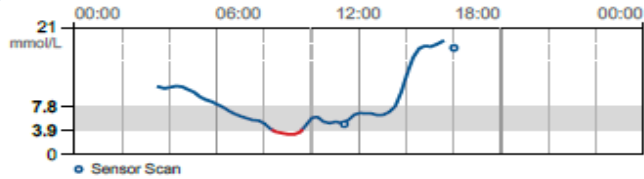
SENSOR DATA CAPTURED **62** %

Daily scans **4**



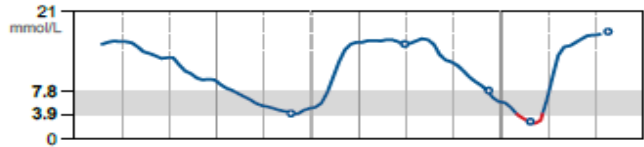
Glucose

**Fri
29 Mar**



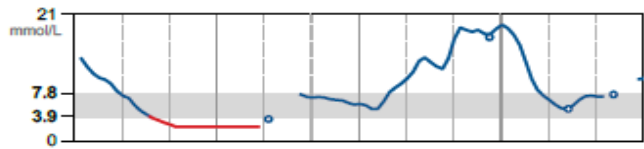
Average Glucose	Carbs	Rapid-Acting Insulin	Long-Acting Insulin
8.4 mmol/L			

**Sat
30 Mar**



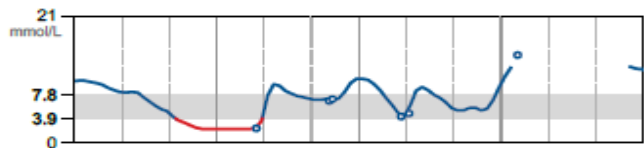
Average Glucose	Carbs	Rapid-Acting Insulin	Long-Acting Insulin
11.1 mmol/L			

**Sun
31 Mar**



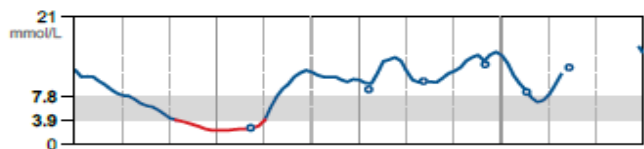
Average Glucose	Carbs	Rapid-Acting Insulin	Long-Acting Insulin
8.4 mmol/L			

**Mon
1 Apr**



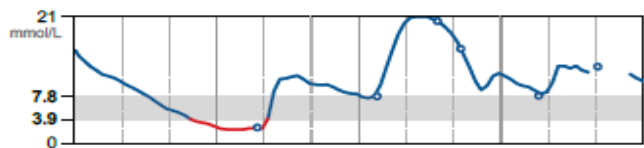
Average Glucose	Carbs	Rapid-Acting Insulin	Long-Acting Insulin
7.0 mmol/L			

**Tue
2 Apr**



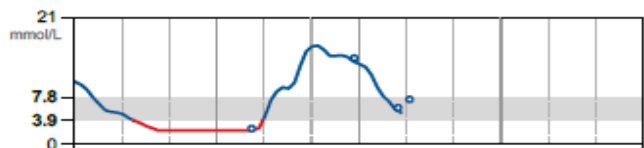
Average Glucose	Carbs	Rapid-Acting Insulin	Long-Acting Insulin
9.0 mmol/L			

**Wed
3 Apr**



Average Glucose	Carbs	Rapid-Acting Insulin	Long-Acting Insulin
10.1 mmol/L			

**Thu
4 Apr**



Average Glucose	Carbs	Rapid-Acting Insulin	Long-Acting Insulin
7.0 mmol/L			

CASE 2



- Attended 2/52 later
- Minimal extra information
- Felt things were worse so had put her rates back to what they had been.
- DSN 'back to basics' review
- Basal rates: 0.5 units/hr midnight-noon
1.5 units/hr noon-midnight
- Clinic time 15.00
- Pump time 12 hour clock - 03.00am!!
- Reset time, FU 1/52

CASE 3



- 36 year old mother of three (18 months; 3 years; 5 years)
- T1DM – since age of 28

- MDI – TDD ~250 units
(100 basal Toujeo; 40-60 units each meal Humalog)

- Unplanned pregnancy
- Presented ~9/40 gestation
- HbA1c 80 mmol/mol
- BMI 23 (Height 160cm; Weight 60kg)
- ACR and BP – normal; Background retinopathy; Hypo aware

- Had been under my care for first 2 pregnancies
- Insulin requirements had been normal
- Recently changed to Toujeo due to high insulin requirements

1 January 2019 - 28 January 2019 (28 days)

Glucose

Estimated A1c **8.9% or 74 mmol/mol**

**AVERAGE
GLUCOSE** **11.6** mmol/L

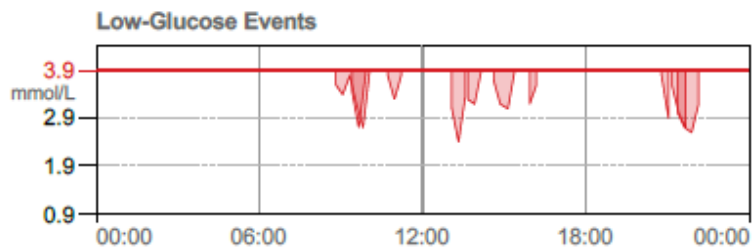
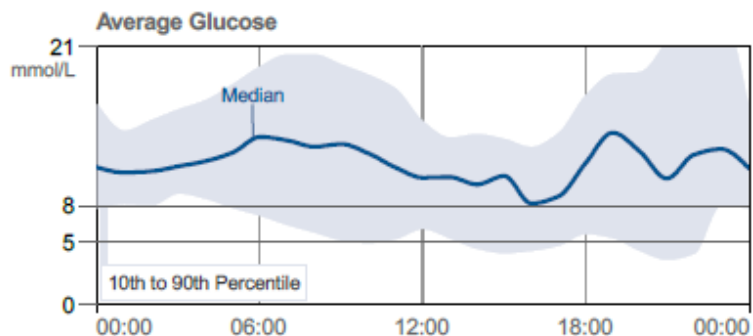
% above target **75** %

% in target **17** %

% below target **8** %

**LOW-GLUCOSE
EVENTS** **10**

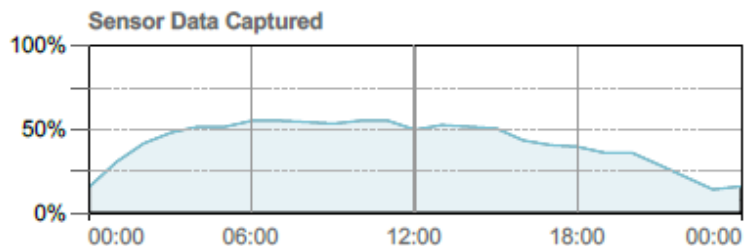
Average duration **47** Min



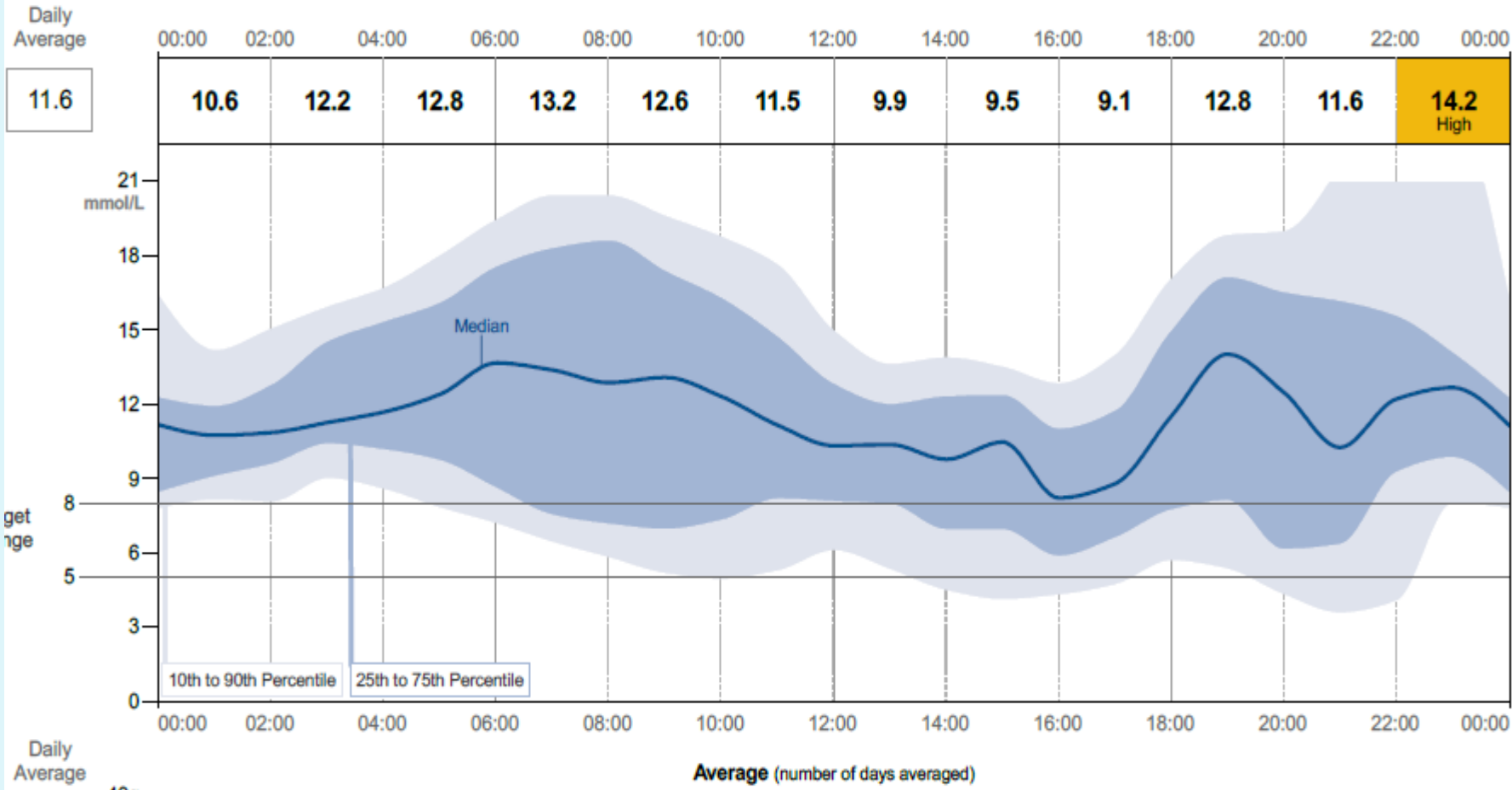
Sensor Usage

SENSOR DATA CAPTURED **43** %

Daily scans **3**



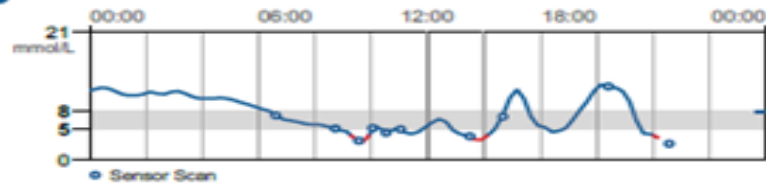
Estimated A1c 8.9% or 74 mmol/mol





Glucose

Tue
8 Jan

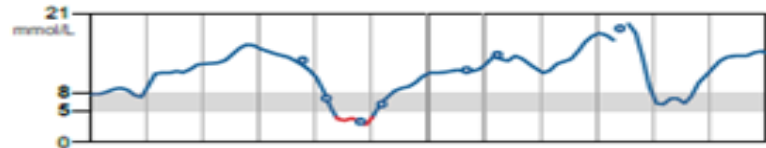


Average
Glucose



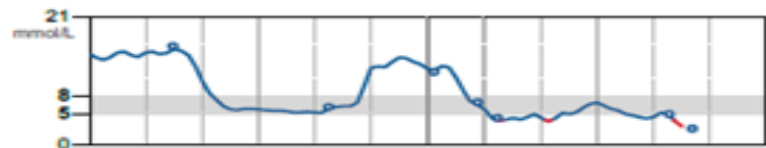
7.6
mmol/L

Wed
9 Jan



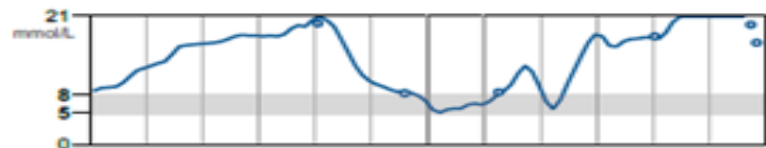
11.4
mmol/L

Thu
10 Jan



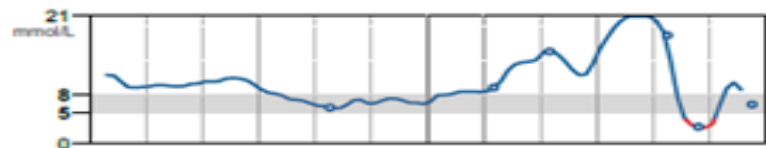
8.3
mmol/L

Fri
11 Jan



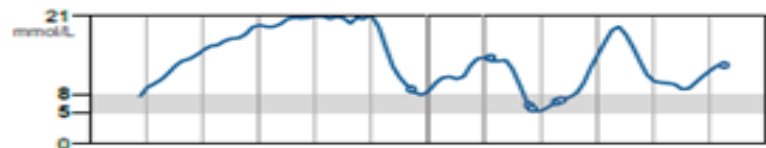
14.6
mmol/L

Sat
12 Jan



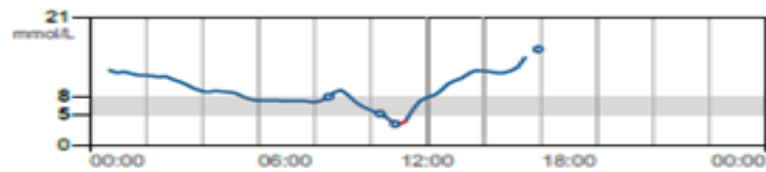
10.2
mmol/L

Sun
13 Jan



13.8
mmol/L

Mon
14 Jan



9.0
mmol/L

CASE 3



- Why is she needing such large doses of insulin and not getting good glucose control?
- Diabetes nurse 'Back to basics'
- Injection sites – marked lipohypertrophy abdomen
- Worst case she'd ever seen (about to retire) !
- Advised to avoid these sites completely
- Insulin doses cut back to avoid her going hypo
- Bolus dose reduced to 10-12 units/meal
- Basal reduced to 30 units
- Normal pregnancy and outcome

**The simplest things account
for most problems – always
go back to basics when
unsure what is happening**

**.....occasionally rarer things
occur.....**



Prof. Eleanor Scott

**Professor of
Diabetes and
Maternal Health**

University of Leeds

**Leeds Teaching
Hospitals NHS Trust**



**Leeds
Pregnancy
Research**