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CSII optimisation

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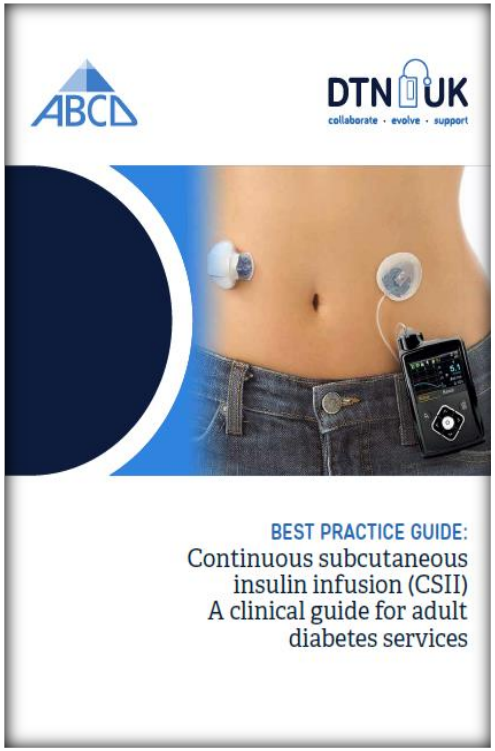
Data and cases have been altered and adapted to ensure anonymity and for teaching purposes

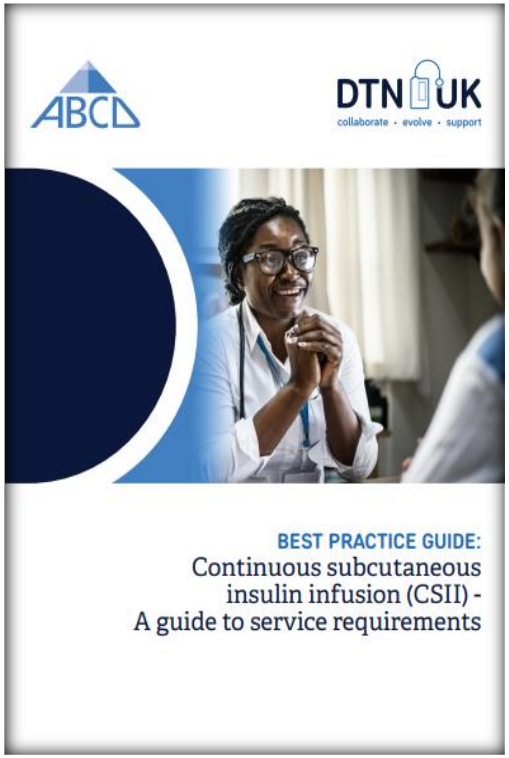
Summary

- 1. Initiation
- 2. Basal rate
- 3. Bolus - could cover IC, ISF, active insulin
- 4. Troubleshooting

Best Practice Guides

www.DTN-UK.care





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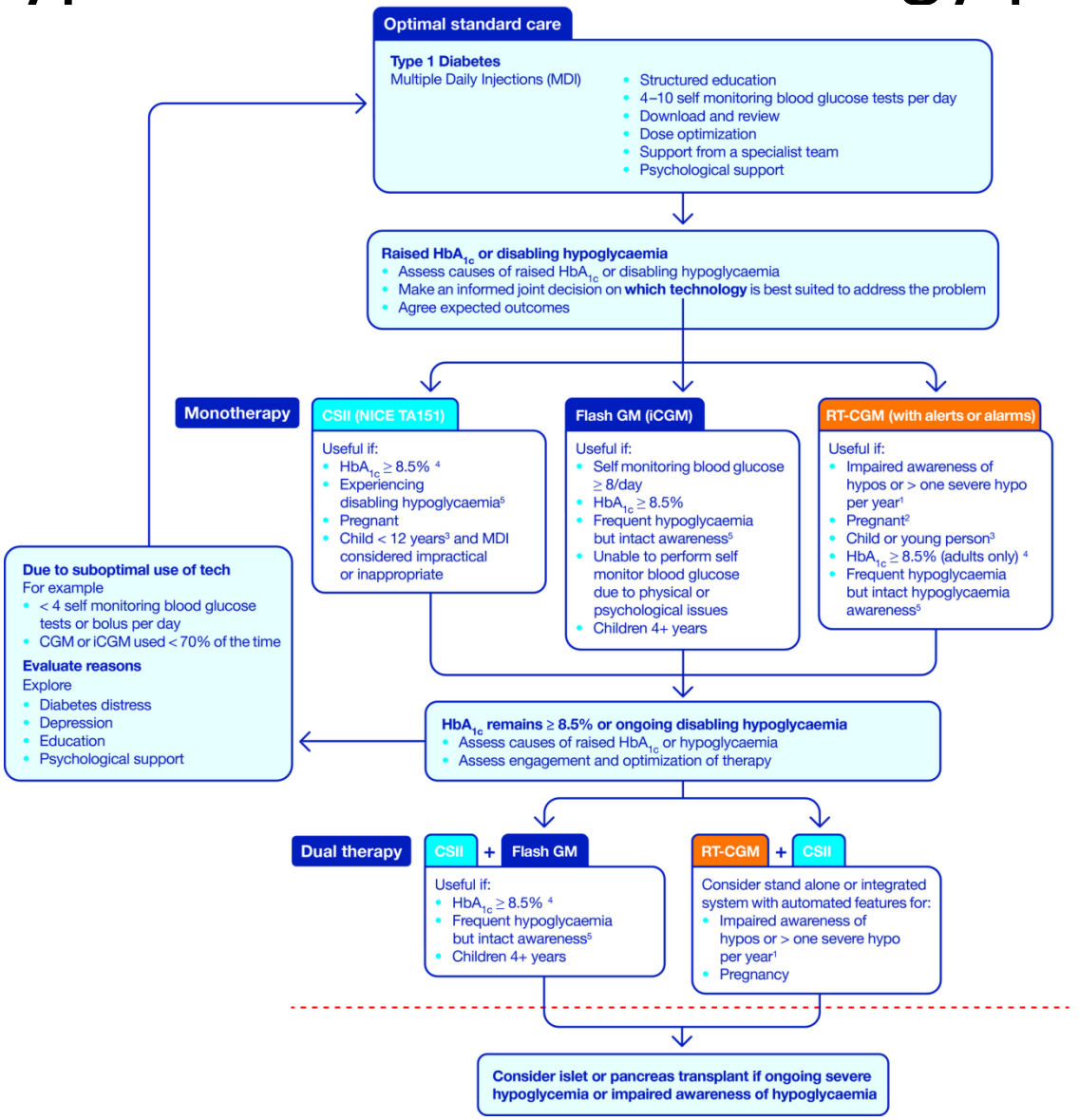
Type 1 diabetes technology pathway



P. Choudhary et al. Diabetic Medicine 36: 531-538 (2019)

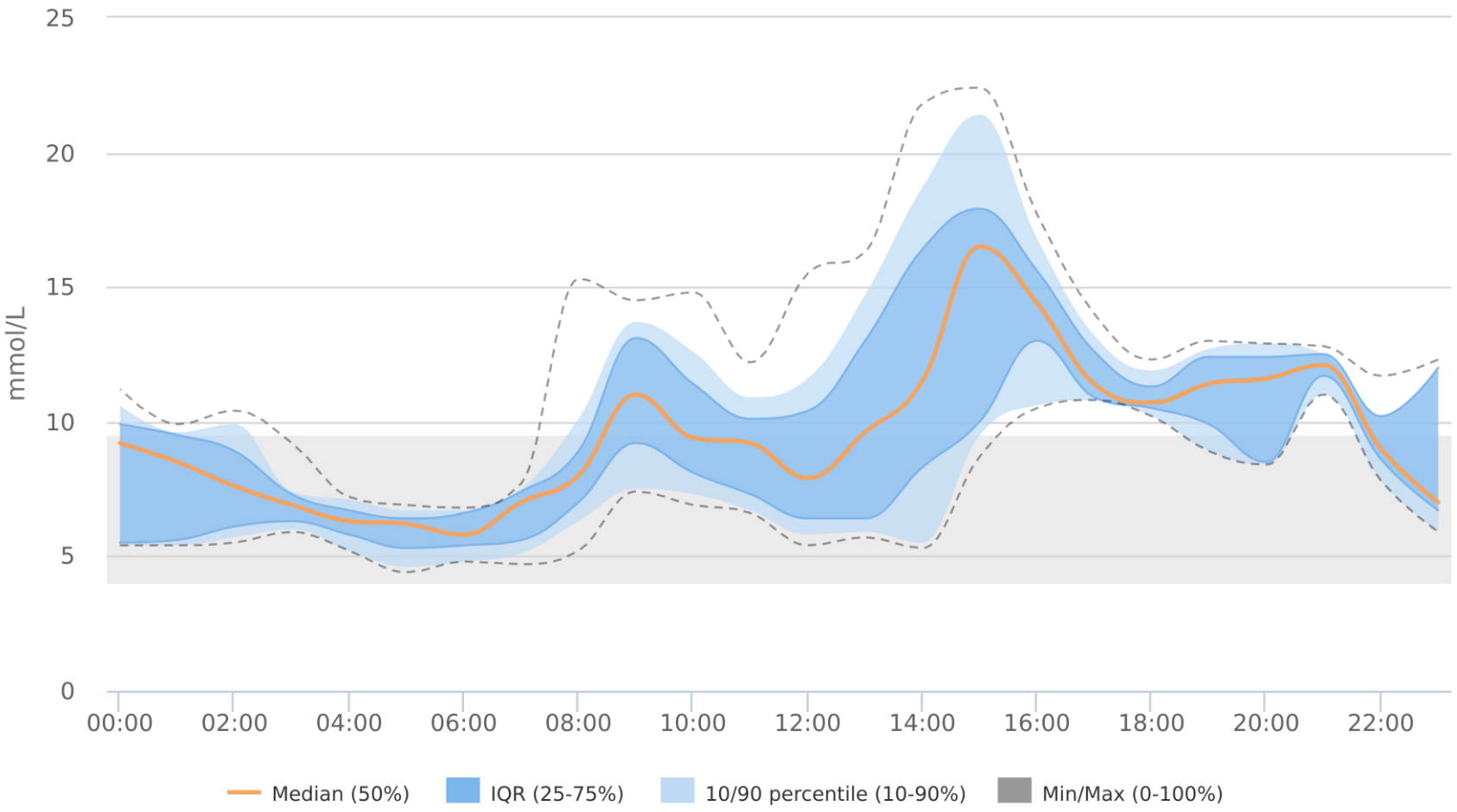
RW, 53M, T1DM for 2 years

- Extended honeymoon period

- HbA1c 90 mmol/l
- On glargine 16 units nocte
- Using lispro as needed with meals, mostly with evening meal

- Purchased Freestyle Libre

RW1

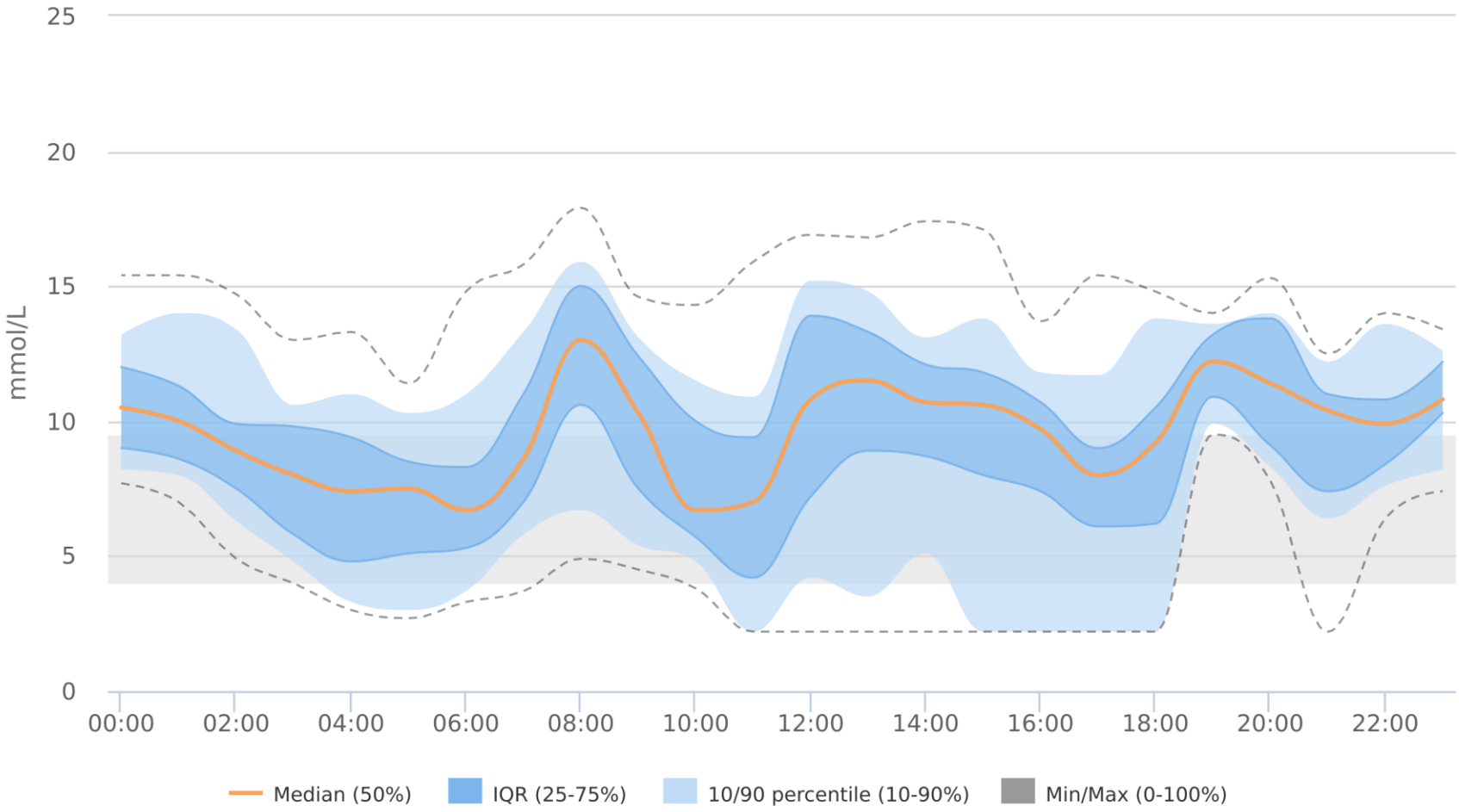

25
20
15
10
5
0
mmol/L
00:00
02:00
04:00
06:00
08:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Median (50%)
IQR (25-75%)
10/90 percentile (10-90%)
Min/Max (0-100%)

RW follow-up

- Switched to detemir 10 units bd and advised to take lispro regularly
- Attended DAFNE course

- HbA1c fallen to 70 mmol/mol but with frequent severe hypoglycaemic episodes

RW2


25
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mmol/L
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02:00
04:00
06:00
08:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
Median (50%)
IQR (25-75%)
10/90 percentile (10-90%)
Min/Max (0-100%)

What technology would you offer?

RW - MDI regimen

How would you start on CSII?

Insulin detemir 10 units BD

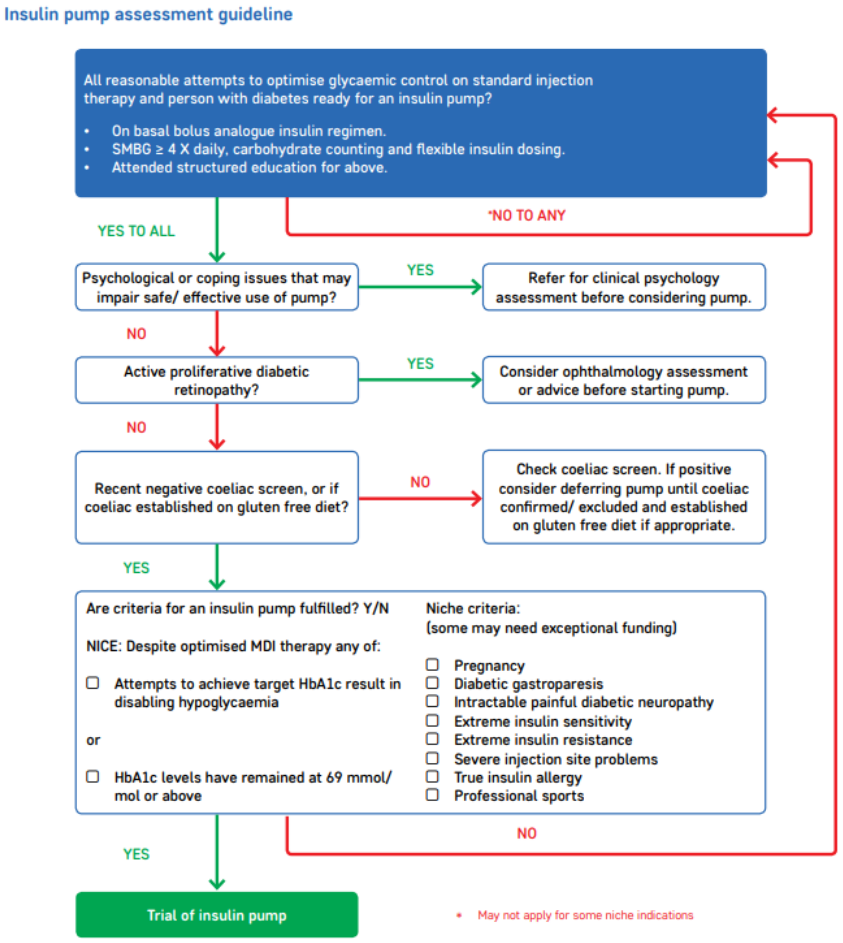
Insulin lispro: IC 1:10; ISF 1:3 – takes about 15-20 units daily

Weight 82 kg

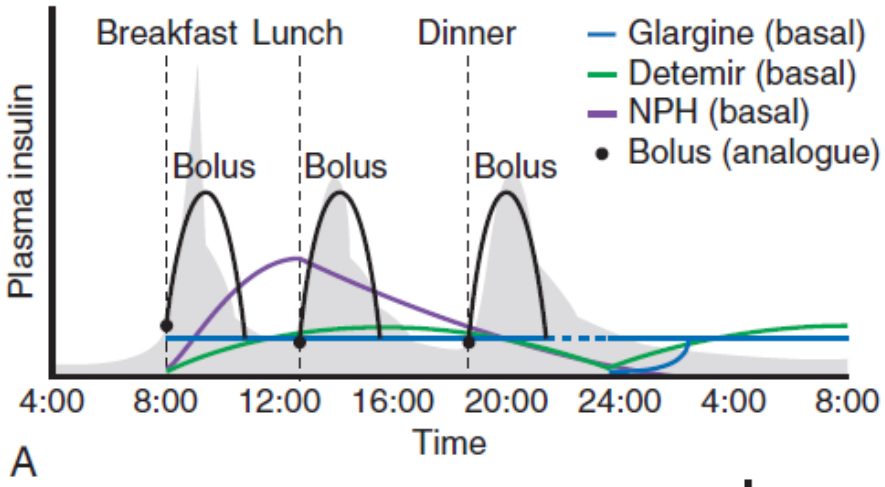
Starting Pump therapy

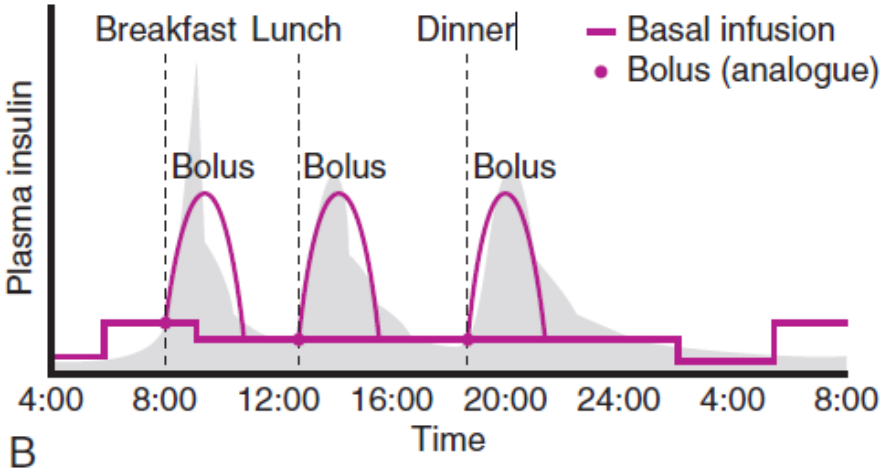
Patient selection

1. **Education, understanding and implementation of the principles of intensive insulin therapy (carbohydrate counting, pre-meal injections, MDI ≥ 3 injections / day, ≥ 4 glucose measurements / day [SMBG or flash / continuous glucose monitoring])**
2. **Motivation to pursue CSII therapy and improve diabetes control**
3. **Engagement with diabetes services**
4. **Realistic expectations of CSII and clearly agreed individual expectations and targets**
5. **Absence of psychological factors that may impair safe CSII use (e.g., psychosis, severe anxiety, or severe depression). However, some psychological issues such as depression due to disease burden from hypoglycaemia or poor control may actually respond well to CSII and there is evidence that CSII can be safely used in this patient cohort (Rodrigues et al 2005)**
6. **Cognitive, visual and physical impairments may require a care partner to be co-trained in pump therapy, and should ideally be managed at more experienced centres, but should not be a contraindication to pump therapy.**



Insulin profiles with MDI and Pumps





Hussain S, Oliver N. Insulin pumps and continuous glucose monitoring made easy. Elsevier 2016

Pump settings?

Initial insulin setting at CSII initiation

Below is a summary flowchart to assist with dose calculation for CSII initiation, adapted from AACE (Consensus statement of AACE task force, 2014).

Calculations for Insulin Pump Settings		
Pump TDD calculation		
Method 1 Pre-pump TDD Pre-pump TDD × 0.75	**Method 2 Patient weight** Weight: kg × 0.5	
Clinical considerations on pump TDD: • Average values from methods 1 and 2 • Problematic hypoglycaemia: consider lower TDD • Hyperglycemic, elevated HbA1c, or pregnant, consider higher TDD		
Pump dose adjustment		
Basal Rate (Pump TDD × 0.5)/24 h	**Carbohydrate Ratio (I:C) ratio** 400/TDD	**Insulin Sensitivity Factor (ISF)** 130/TDD
• Start with one basal rate, adjust according to glucose values over basal rate testing • Add additional basal according to need (e.g. Dawn phenomenon)	• e.g. TDD 35 units = 400/35 = 11.4, I:C ratio 1 unit: 11g • Most adults require 1 unit: 8-15g • Acceptable post prandial rise is ~3mmol/l • Adjust based on low-fat meals with known quantity of carbohydrate	• Correction insulin dose should bring glucose back to target range in 4-5 hours

Circadian profile for Pump basal

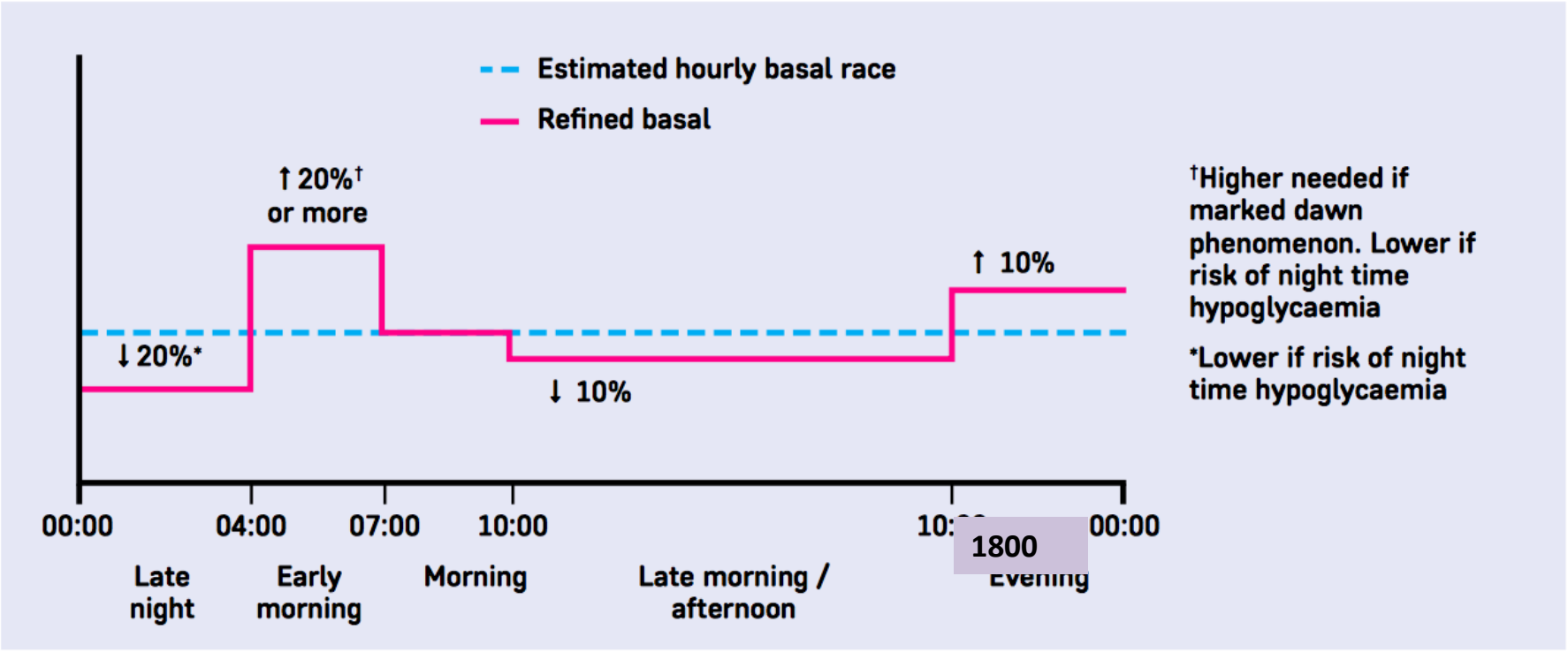


Figure 2. Modified Basal Rate Profile
(Adapted from Hussain & Oliver: Insulin Pumps and Continuous Glucose Monitoring Made Easy, 1e, 2016, Elsevier Ltd)

Eg for 0.5 unit / hour:

0000- 0400	0.4 unit/ hour	1000 – 1800	0.45 unit / hour
0400- 0700	0.6 unit / hour	1800 – 0000	0.55 unit/ hour
0700-1000	0.5 unit / hour		

What pump settings will you set?

- Basal rates
- ICR
- ISF
- Active insulin time
- BG target

	TDD METHOD 1			TDD METHOD 2		
	TDD (MDI)	TDD (Pumps)	24 Hr Basal	WT (kg)	TDD	24 Hr Basal
	35	26.25	50%	82	41	50%
			13.13			20.50
		Average TDD	33.625			
		Average basal =	16.81			

Standard FLAT Basal Rate:	0.71
OR	
Modified basal rate	

Start	Stop	consider times	Hours	Percentage	Basal rate	Total basal Insulin
0:00	4:00	midnight	4.0	80%	0.57	2.28
4:00	7:00	wake-up	3.0	120%	0.85	2.56
7:00	10:00		3.0	100%	0.71	2.14
10:00	18:00	post work/travel	8.0	90%	0.64	5.13
18:00	0:00		6.0	110%	0.78	4.70
			24.0			16.81

Bolus wizard setting	
Hypos	High A1C
ICR	
12	10
ISF	
4	
BG target	
6	5
Active insulin time	
4	

Considerations

- Hypos - Can consider 10% TDD dose reduction

OR

- Can consider reduced basal and different ICR at afternoon times when hypos more likely

Insulin pump settings

Figure 3 Insulin pump settings

	Settings
Total Daily Dose (TDD)	If problematic hypoglycaemia consider a 10% reduction
Insulin:Carbohydrate ratio	300-400/TDD
Insulin Sensitivity Factor (ISF)	130/TDD
Insulin active time	4 hours*
Blood glucose target	5 mmol/l**

- * For TDD <30 units per day consider reduced insulin active time
- * Consider longer active insulin time in renal failure (GFR<45), or bolus size>10 or TDD>60
- ** Targets need to be individually tailored. For HbA1c >86 mmol/mol (10%) consider a BG target 9-10 with the plan to reduce target every month by 1 mmol/l to create a gradual fall in HbA1c. This is particularly important that those with retinopathy. Different pump bolus advisors calculate correction targets differently, the reason to suggesting single value or a narrow range (4.5-5.5mmol/l) is that it overcomes issues with this.

Table 3: Predicted ICR and ISF based on insulin pump total daily dose (TDD)

TDD	I:C Ratio 1 unit of insulin for X g of carbs	ISF 1 unit reduces glucose by...
	400 rule	130 rule
10	40	13
20	20	6.5
30	13	4.3
40	10	3.3
50	8	2.6
60	7	2.2
70	6	1.9

How would you initiate insulin pump therapy and continue on-going management?

Pre-pump

- User selection
- Education / Structured education
- Pump trials
- Setting goals and expectations

Pump initiation

- Saline trials?
- Pump initiation protocol, initial setting calculation and education
- Support and monitoring at initiation

Pump maintenance

- On-going follow-up (including telemedicine follow-ups)
- Reviewing clinical and pump data (including pump downloads)
- On-going education and revising emergency management
- Ensuring pump is working and being used correctly including monitoring sites
- Fine tuning, CGM and data downloads
- Special situations (pregnancy, school, exercise, surgery , hospitalisation, etc.)

MULTI-DISCIPLINARY DIABETES PUMP SERVICE

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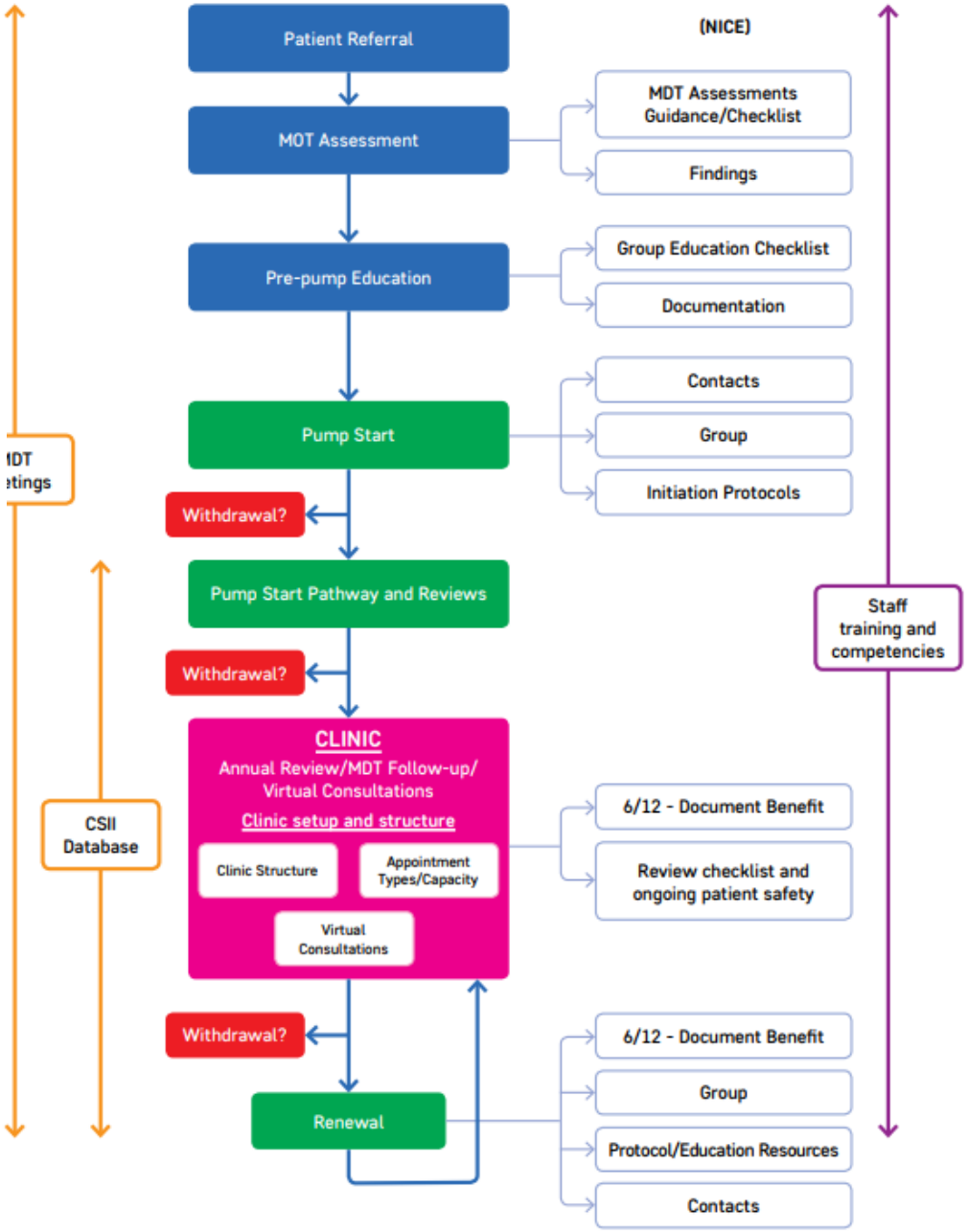
Reviews after CSII initiation

Ideally the 1st year of pump initiation should include:

- Week 1 pump therapy – daily telephone or email contact with specialist team member
- Week 2 pump therapy – twice weekly telephone and/ or email contact with specialist team member
- Week 4-5 pump therapy – face to face appointment with specialist team member for review and education. Pump downloads used to assess pump use, glucose levels, basal and bolus insulin requirements, alarm history and pump settings.
- Thereafter pump users are encouraged to have telephone or email contact with the diabetes specialist team as required by individual for clinical support.
- Appointments in consultant led pump clinic MDT as follows in the 1st year of pump therapy initiation:
  - 3 months after initiation of pump therapy
  - 6 months after initiation of pump therapy
  - 12 months after initiation of pump therapy

APPENDIX 1 - CSII PATHWAY



Best practice guide – CSII, a guide to service requirements (www.DTN-UK.care)

The eyes see what the mind knows

- Structural issues

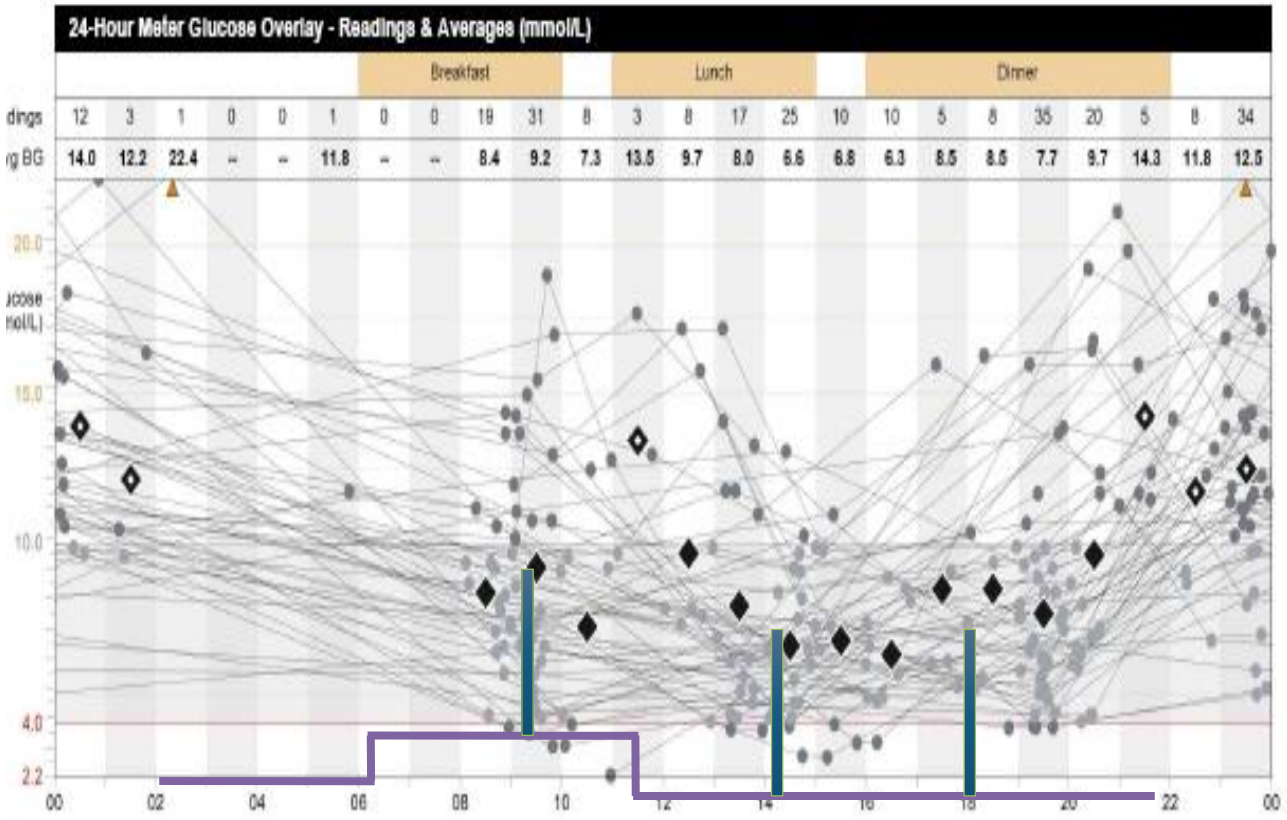
✓ Frequency of set changes
✓ Number of BG tests
✓ Number of boluses
✓ Over-rides
✓ Over-treatment of highs or lows

- Behavioural issues

✓ Basal
  ✓ Overnight
  ✓ Daytime
✓ Bolus ratios [I:C]
✓ Corrections [ISQ]
✓ Target levels

Table 4. A guide to insulin pump download interpretation

Glucose	Insulin	Pump settings
• What is the frequency of glucose monitoring? - Be aware that in those achieving HbA1c < 58mmol/mol (7.5%) the average BG tests per day is ≥ 5 • What is the mean glucose and therefore estimated HbA1c? • What is the glycaemic variability? - Standard deviation (SD) ≥ 3.5 mmol/l or CV (SD/mean) ≥ 36% suggests high variability (Danne et al. 2017) • What percentage of time is spent in hypoglycaemia? - ≥ 10% in someone monitoring ≥ 4/day is a concern, so identify the cause.	• What percentage of the total daily dose is basal? - ~40-60% expected - but take number of boluses and carbohydrate intake into account • Is the basal insulin adequate? - Is the glucose stable overnight and fasting at times when there are no other confounding factors? • What is the frequency of boluses? - Is all carbohydrate covered with a bolus? - Optimal glucose control often requires ≥ 5 bolus /day	• What is the total daily dose? • Do the I:C ratio and ISF fit with expectations taking into account the 400 and 130 rules? • If more insulin resistant at certain points of the day, are I:C and ISF in keeping with this? • Are set changes occurring at least every 3 days? • Is the bolus calculator used for the majority of boluses? - Is bolus calculator advice being over-ridden? • What is the target range? - Remember Medtronic pumps correct to the upper level so consider using 4.5-5.5mmol/l for most to overcome this - but do individualise targets following discussion with users. • If settings are way off those expected, with ineffective basal rates and bolus ratios, and sub-optimal control, consider resetting insulin pump settings based on weight calculations. Note that this will require close contact thereafter for further optimisation.



Statistics	19/11 - 13/01	
Avg BG (mmol/L)	9.3 ± 4.3	
BG Readings	263	4.7/day
Readings Above Target	96	37%
Readings Below Target	16	6%
Sensor Avg (mmol/L)	--	
Avg AUC > 10.0 (mmol/L)	--	--
Avg AUC < 4.0 (mmol/L)	--	--

Avg Daily Carbs (g)	198 ± 43	
Carbs/Bolus Insulin (g/U)	13.1	

Avg Total Daily Insulin (U)	29.1 ± 3.6	
Avg Daily Basal (U)	14.0	48%
Avg Daily Bolus (U)	15.1	52%

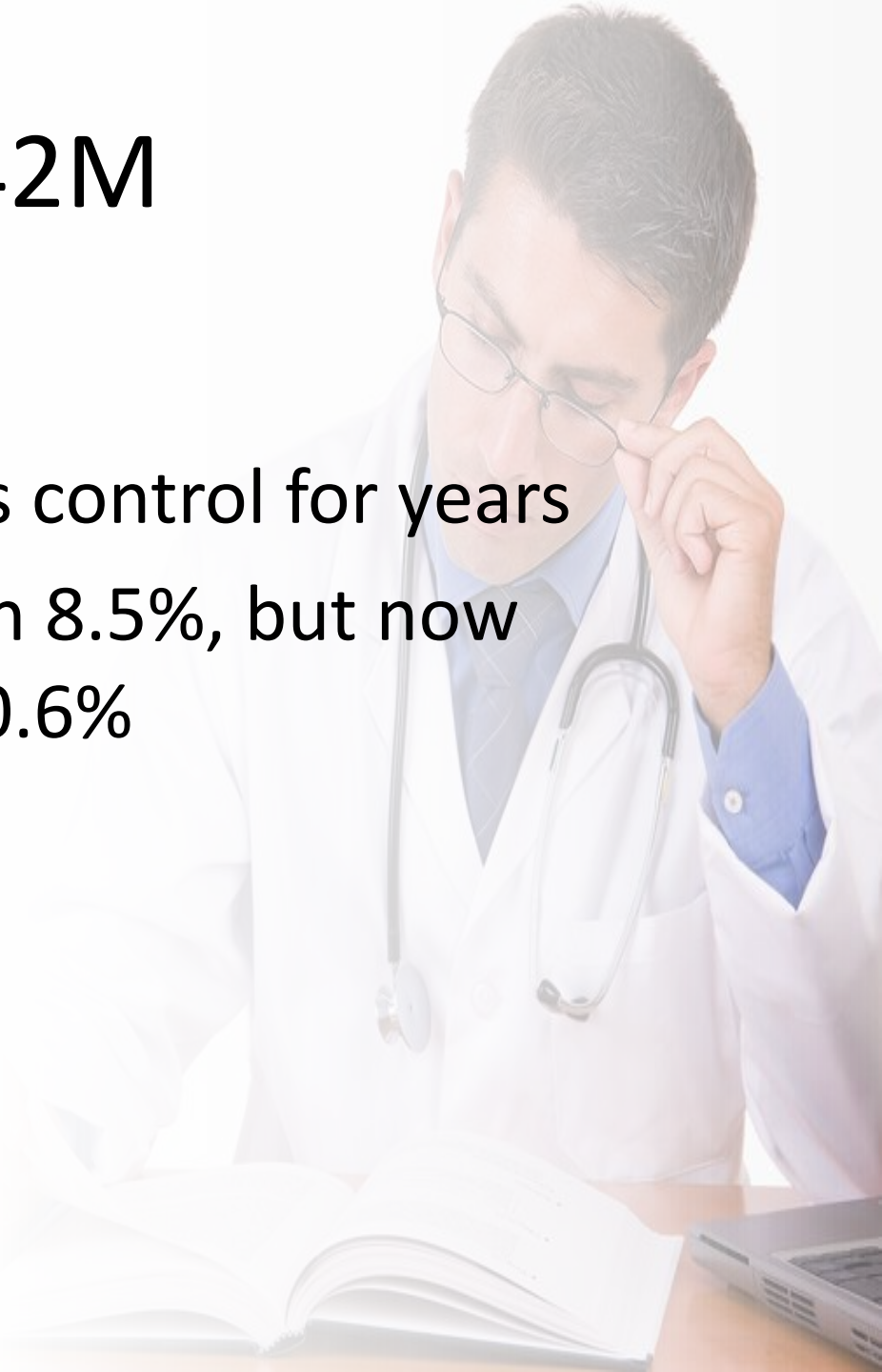
Statistics	19/11 - 13/01	
Avg BG (mmol/L)	9.3 ± 4.3	
BG Readings	263	4.7/day
Readings Above Target	96	37%
Readings Below Target	16	6%
Sensor Avg (mmol/L)	--	
Avg AUC > 10.0 (mmol/L)	--	--
Avg AUC < 4.0 (mmol/L)	--	--

Avg Daily Carbs (g)	198 ± 43	
Carbs/Bolus Insulin (g/U)	13.1	

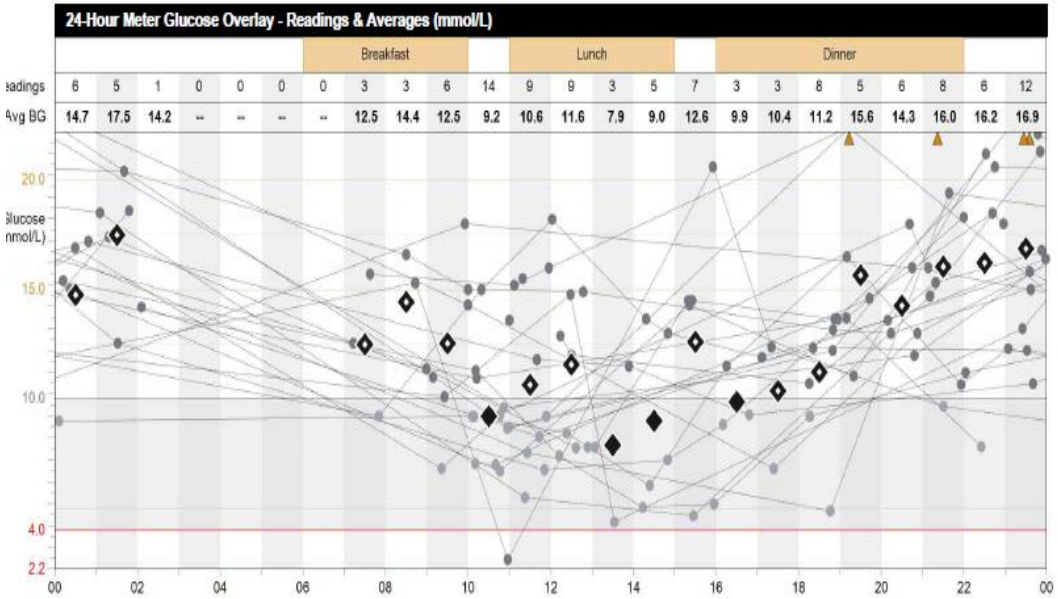
Avg Total Daily Insulin (U	29.1 ± 3.6	
Avg Daily Basal (U	14.0	48%
Avg Daily Bolus (U	15.1	52%

AB, 42M

- T1DM for 28 years
- Struggled with diabetes control for years
- At best HbA1c had been 8.5%, but now increased back up to 10.6%



	Glucose Measurements		Bolus Events					Fill Events					
	BG Readings	Sensor Duration (h:mm)	Manual Boluses	Bolus Wizard Events	With Food	With Correction	Overridden	Rewind	Cannula Fills	Cannula Amount (U)	Tubing Fills	Tubing Amount (U)	Suspend Duration (h:mm)
Thursday 19/12/2013	5			5	1	4	4	1	1	0.5	1	3.2	
Friday 20/12/2013	3			4	3	2							
Saturday 21/12/2013	2			5	4	1							
Sunday 22/12/2013	5			3	2	1	1						
Monday 23/12/2013	2			4	2	2	1						
Tuesday 24/12/2013	2			2	2		1	1	1	0.5	1	2.8	
Wednesday 25/12/2013	5			4	2	2	2						
Thursday 26/12/2013	3			4	3	1	1						
Friday 27/12/2013	3			5	5		1						
Saturday 28/12/2013	4			2	2								
Sunday 29/12/2013	1		1	2	1	1	1						
Monday 30/12/2013	3			3	2	1	2	1	1	0.5	1	2.5	
Tuesday 31/12/2013	6			5	1	4	1						
Wednesday 01/01/2014	2			3	2	2	1						
Summary	3.3/day	0m	0.1/day	3.6/day	62.7%	41.2%	31.4%	3	3	0.5U /fill	3	2.8U/fill	0m



Statistics	19/12 - 15/01	
Avg BG (mmol/L)	12.9 ± 4.6	
BG Readings	122	4.4/day
Readings Above Target	86	70%
Readings Below Target	1	1%
Sensor Avg (mmol/L)	--	
Avg AUC > 10.0 (mmol/L)	--	--
Avg AUC < 4.0 (mmol/L)	--	--

Avg Daily Carbs (g)	49 ± 23	
Carbs/Bolus Insulin (g/U)	7.6	

Avg Total Daily Insulin (U)	21.0 ± 2.4	
Avg Daily Basal (U)	14.5	69%
Avg Daily Bolus (U)	6.5	31%

Standard (active)

24-Hour Total	14.575 U

TIME	U/hr
0:00	0.550
10:00	0.600
13:30	0.650
17:00	0.700
22:00	0.600

Easy (Audio) Bolus	On
Entry (Step)	1.00 U

Bolus Wizard	On
Units	g, mmol/L
Active Insulin Time (h:mm)	4:00
Insulin Concentration	--

Missed Bolus Reminder	On
Start (h:mm)	End (h:mm)
9:30	10:00
13:30	14:00
18:30	19:00

Carbohydrate Ratio (g/U)

TIME	Ratio
0:00	12.0
11:30	12.0
18:00	10.0
21:00	14.0

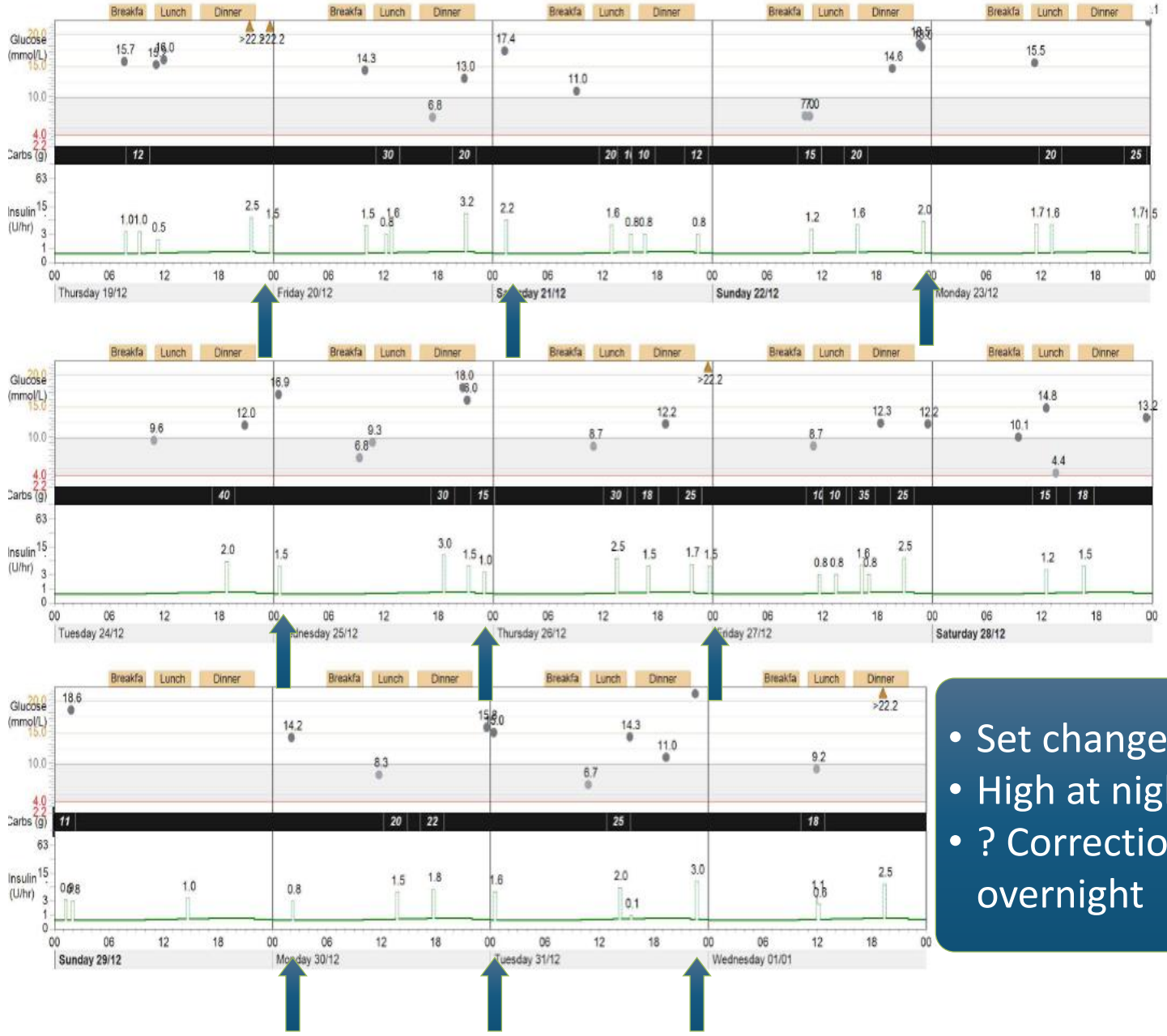
Insulin Sensitivity (mmol/L per U)

TIME	Sensitivity
0:00	4.5

Blood Glucose Target (mmol/L)

TIME	Low	High
0:00	6.0	7.5

- Set changes
- High at night
- ? Correction overnight

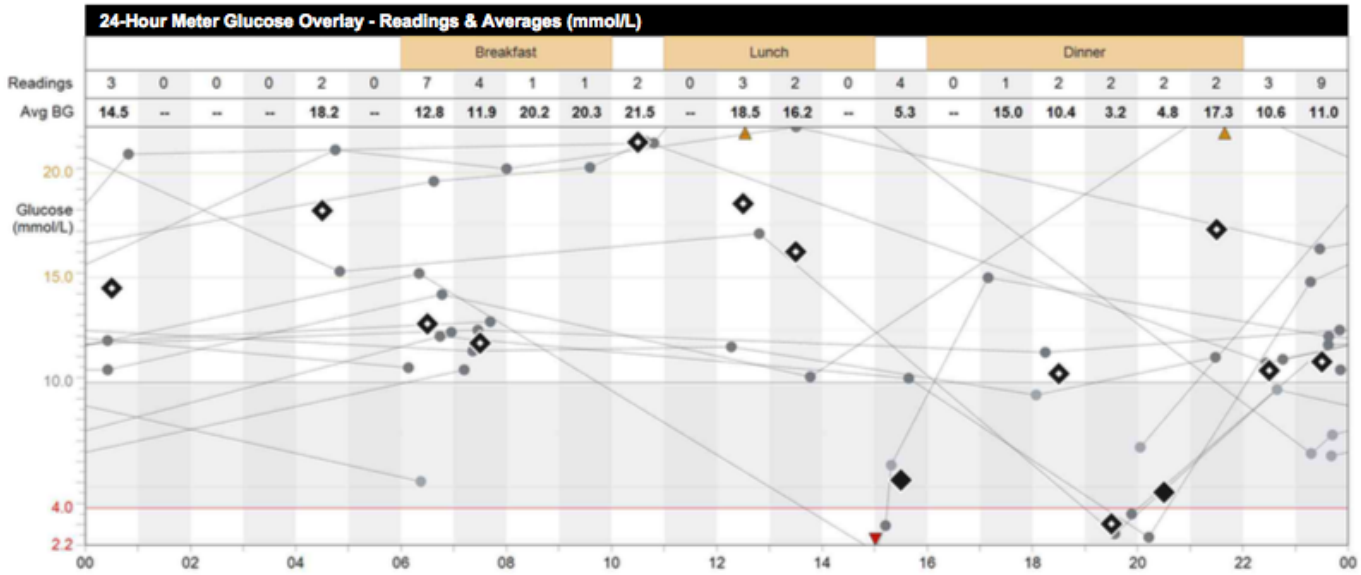


- Set changes
- High at night
- ? Correction overnight

CD, 48M

- T1DM since age 14
- DAFNE 2010
- Started CSII 2010
- Over 50 severe hypos/complete hypo unawareness
- GOLD score 7
- DDS2-6 Failing with diabetes
- Proliferative retinopathy - laser treated
- Hypertension
- Obesity
- Sleep Apnoea (on CPAP)
- Hypogonadism (on testosterone)

	Glucose Measurements		Bolus Events					Fill Events					
	BG Readings	Sensor Duration (h:mm)	Manual Boluses	Bolus Wizard Events	With Food	With Correction	Overridden	Rewind	Cannula Fills	Cannula Amount (U)	Tubing Fills	Tubing Amount (U)	Suspend Duration (h:mm)
Wednesday 09/08/2017	2			5	4	1		1	1	0.3	1	9.2804	0:04
Thursday 10/08/2017	2			8	6	2	1						
Friday 11/08/2017	6			9	7	3	3	1	1	0.3	1	10.7103	0:03
Saturday 12/08/2017	2			8	7	1							
Sunday 13/08/2017	4			10	7	3	4						
Monday 14/08/2017	4			10	8	2		1	1	0.3	1	10.6365	0:10
Tuesday 15/08/2017	2			6	5	1							
Wednesday 16/08/2017	5			7	5	2	3	1	1	0.3	1	10.8856	0:12
Thursday 17/08/2017	4			7	4	3	1						
Friday 18/08/2017	4			6	3	3	1	1	1	0.3	1	11.5498	0:06
Saturday 19/08/2017	4			7	5	2	1						
Sunday 20/08/2017	4			6	3	3	2						0:01
Monday 21/08/2017	3			6	4	2	2	1	1	0.3	1	10.6549	0:04
Tuesday 22/08/2017	4			8	4	4							
Summary	3.6/day	0m	0.0/day	7.4/day	69.9%	31.1%	17.5%	6	6	0.3U /fill	6	10.6U/fill	40m



Statistics	09/08 - 22/08	
Avg BG (mmol/L)	12.5 ± 5.9	
BG Readings	50	3.6/day
Readings Above Target	37	74%
Readings Below Target	5	10%
Sensor Avg (mmol/L)	--	
Avg AUC > 10.0 (mmol/L)	--	--
Avg AUC < 4.0 (mmol/L)	--	--

Avg Daily Carbs (g)	*393 ± 146*
Carbs/Bolus Insulin (g/U)	6.0

Avg Total Daily Insulin (U)	100.64 ± 18.1	
Avg Daily Basal (U)	35.63	35%
Avg Daily Bolus (U)	65.01	65%

Basal

Maximum Basal Rate	3.50 U/Hr

Basal 1 (active)

24-Hour Total	35.700 U

Time	U/Hr
0:00	1.50
3:00	1.50
10:00	1.60
15:00	1.30
19:00	1.50

Day Off

24-Hour Total	--

Time	U/Hr
--	--

Workday

24-Hour Total	--

Time	U/Hr
--	--

Bolus

Bolus Wizard	On
Units	g, mmol/L
Active Insulin Time (h:mm)	4:00
Maximum Bolus	25.0 U

Easy Bolus	Off
Bolus Increment	0.1 U
Bolus Speed	Standard
Dual/Square	On/On

Carbohydrate Ratio (g/U)

Time	Ratio
0:00	7.0
3:00	5.0
9:00	8.0
15:00	8.0
19:00	7.0

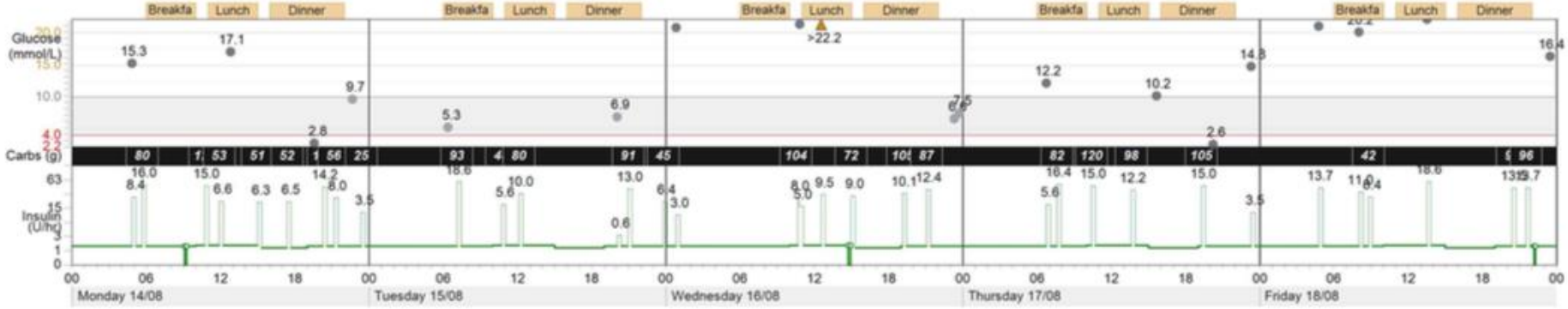
Insulin Sensitivity (mmol/L per U)

Time	Sensitivity
0:00	1.4
3:00	1.1
9:00	1.8
15:00	1.7
19:00	1.5

Blood Glucose Target (mmol/L)

Time	Low	High
0:00	6.0	6.0


Breakfa
Lunch
Dinner
Glucose (mmol/L)
Carbs (g)
Insulin (U/hr)
Wednesday 09/08
Thursday 10/08
Friday 11/08
Saturday 12/08
Sunday 13/08


Breakfa
Lunch
Dinner
Glucose (mmol/L)
Carbs (g)
Insulin (U/hr)
Monday 14/08
Tuesday 15/08
Wednesday 16/08
Thursday 17/08
Friday 18/08


Breakfa
Lunch
Dinner
Glucose (mmol/L)
Carbs (g)
Insulin (U/hr)
Saturday 19/08
Sunday 20/08
Monday 21/08
Tuesday 22/08

Care Plan

- Reset pump settings to balance basal and bolus
- Enter correct carb values and BG value with EVERY bolus
- Restrict carb intake to < 40 gms / meal and ideally no more than 200 gms / day
- Bolus 20 mins pre-meal
- Will need dietary advice and checking of carb counting
- Arrange for CGM given hypoglycaemia issues

Basal

Maximum Basal Rate	5.20 U/Hr
Temp Basal Type	Percent of Basal

Standard (active)

24-Hour Total	47.600 U

TIME	U/hr
0:00	1.80
4:00	2.60
7:00	1.80
19:00	2.20

Pattern A

24-Hour Total	45.750 U

TIME	U/hr
0:00	1.60
7:00	2.70
10:00	1.55
14:00	1.75
19:00	2.30

Pattern B

24-Hour Total	--

TIME	U/hr
--	--

Bolus

Maximum Bolus	40.0 U
Dual/Square (Variable)	On
Blood Glucose Reminder	On

Easy (Audio) Bolus	Off
Entry (Step)	0.10 U

Bolus Wizard	On
Units	g, mmol/L
Active Insulin Time (h:mm)	4:00
Insulin Concentration	--

Missed Bolus Reminder	Off
Start (h:mm)	End (h:mm)
--	--

Carbohydrate Ratio (g/U)

TIME	Ratio
0:00	5.0
6:00	5.0
12:00	5.0
22:00	5.5

Insulin Sensitivity (mmol/L per U)

TIME	Sensitivity
0:00	1.3

Blood Glucose Target (mmol/L)

TIME	Low	High
0:00	4.5	6.0

Basal

Maximum Basal Rate	3.50 U/Hr

Basal 1 (active)

24-Hour Total	35.700 U

Time	U/Hr
0:00	1.50
3:00	1.50
10:00	1.60
15:00	1.30
19:00	1.50

Day Off

24-Hour Total	--

Time	U/Hr
--	--

Workday

24-Hour Total	--

Time	U/Hr
--	--

Bolus

Bolus Wizard	On
Units	g, mmol/L
Active Insulin Time (h:mm)	4:00
Maximum Bolus	25.0 U

Easy Bolus	Off
Bolus Increment	0.1 U
Bolus Speed	Standard
Dual/Square	On/On

Carbohydrate Ratio (g/U)

Time	Ratio
0:00	7.0
3:00	5.0
9:00	8.0
15:00	8.0
19:00	7.0

Insulin Sensitivity (mmol/L per U)

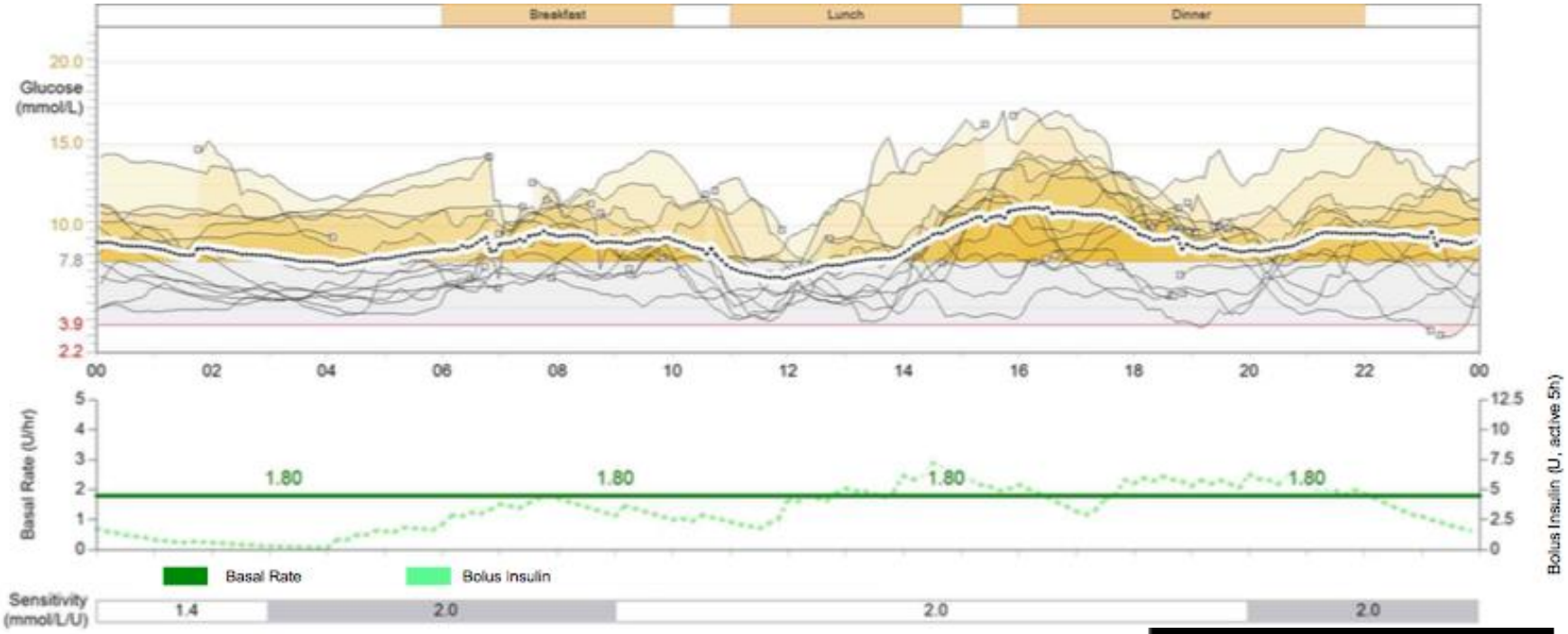
Time	Sensitivity
0:00	1.4
3:00	1.1
9:00	1.8
15:00	1.7
19:00	1.5

Blood Glucose Target (mmol/L)

Time	Low	High
0:00	6.0	6.0

Recalculation of settings:

Basal - 1.8units/hr
Carb ratio – 4 grams
ISF- 1.4 mmol/l
Target set at 5.0mmol/l



- HbA1c 7.0%
- Only one severe hypos, was off sensor
- Confidence++++
- Can go out alone, attended appointment without wife
- DDS2 - 2

Statistics	
Avg BG	9.6 ± 3.4mmol/L
Estimated A1C	7.2%
BG Readings	2.9 per day
Carbs Entered	15.6 ± 2.8ex per day

Hypoglycemic Patterns (1)	
	23:18-23:43 (1)
Time Period	

Hyperglycemic Patterns (4)**	
	13:15-20:00
Time Period	20:15-23:20
	04:40-10:55

Pump Use	Per Day
Insulin TDD	70.2 ± 7.9U
Basal/Bolus Ratio	55 / 45
Manual Boluses	0.0U (0.0 boluses)

Bolus settings:
IC, ISF, Active insulin time

Ms AK

- 52 year old with 41 year history of T1D
- On CSII since 2006
- Fear of hypos , especially nocturnal hypos
- HbA1c 10.2% (88) – around 9.5 – 10.5% for several years

Basal

Maximum Basal Rate	1.80 U/Hr

Basal 1 (active)

24-Hour Total	20.600 U

Time	U/Hr
0:00	0.725
2:00	0.750
3:00	0.725
4:00	0.775
7:30	0.925
9:00	0.900
11:00	0.825
16:00	0.900
17:00	0.975
21:00	0.950

Day Off

24-Hour Total	--

Time	U/Hr
--	--

Workday

24-Hour Total	--

Time	U/Hr
--	--

Bolus

Bolus Wizard	On
Units	g, mmol/L
Active Insulin Time (h:mm)	4:00
Maximum Bolus	16.0 U

Easy Bolus	Off
Bolus Increment	0.1 U
Bolus Speed	Standard
Dual/Square	Off/Off

Carbohydrate Ratio (g/U)

Time	Ratio
0:00	12.0
11:00	10.0
14:30	9.0
21:00	13.0

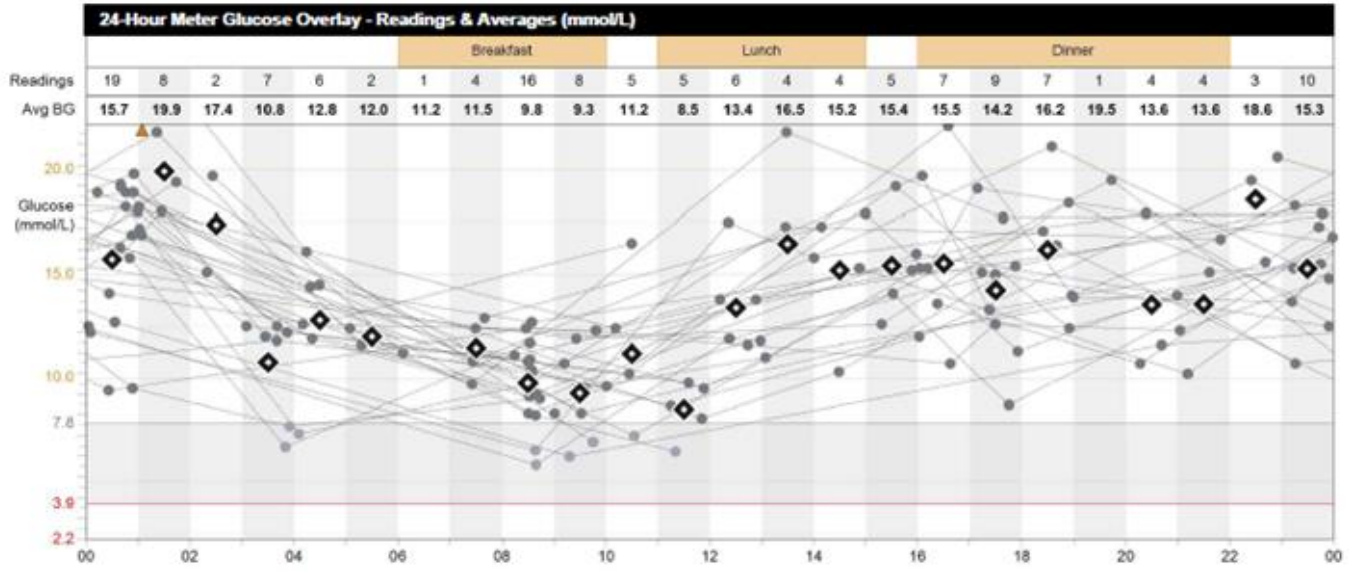
Insulin Sensitivity (mmol/L per U)

Time	Sensitivity
0:00	3.2
7:30	2.6
22:00	3.2

Blood Glucose Target (mmol/L)

Time	Low	High
0:00	6.0	7.5
7:30	5.0	7.0

24-Hour Meter Glucose Overlay - Readings & Averages (mmol/L)



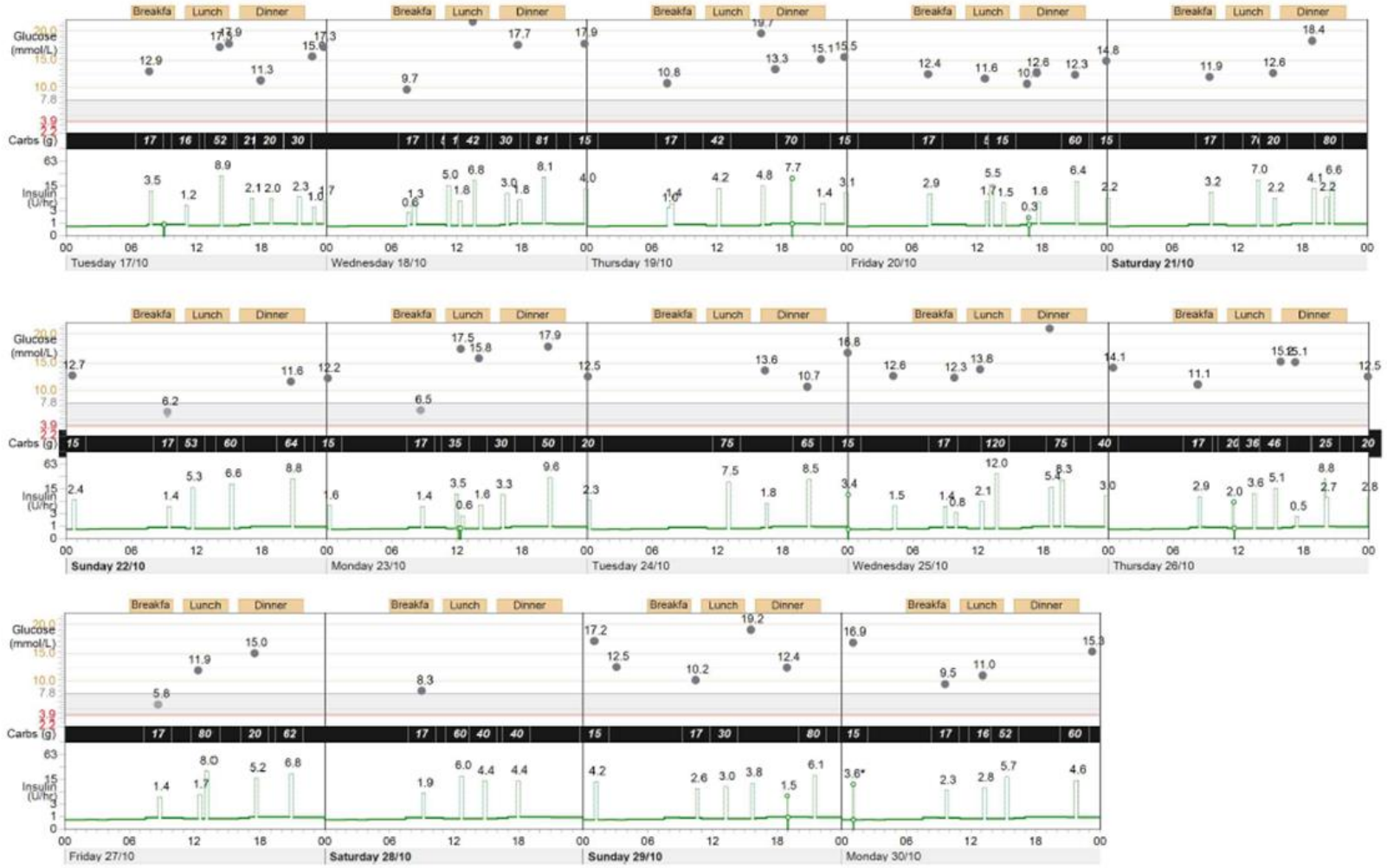
Statistics	17/10 - 19/11	
Avg BG (mmol/L)	13.8 ± 4.0	
BG Readings	147	4.3/day
Readings Above Target	138	94%
Readings Below Target	--	0%
Sensor Avg (mmol/L)	--	
Avg AUC > 7.8 (mmol/L)	--	--
Avg AUC < 3.9 (mmol/L)	--	--

Avg Daily Carbs (g)	*178 ± 40*	
Carbs/Bolus Insulin (g/U)	7.7	

Avg Total Daily Insulin (U)	43.63 ± 5.2	
Avg Daily Basal (U)	20.52	47%
Avg Daily Bolus (U)	23.11	53%

	Glucose Measurements		Bolus Events					Fill Events					
	BG Readings	Sensor Duration (h:mm)	Manual Boluses	Bolus Wizard Events	With Food	With Correction	Overridden	Rewind	Cannula Fills	Cannula Amount (U)	Tubing Fills	Tubing Amount (U)	Suspend Duration (h:mm)
Tuesday 17/10/2017	6			10	6	6		1	1	0.3	1	7.0202	0:03
Wednesday 18/10/2017	4			9	7	4							
Thursday 19/10/2017	5			8	4	5							0:01
Friday 20/10/2017	6			8	5	6		1	1	0.3	1	8.0904	0:03
Saturday 21/10/2017	3			6	5	3							
Sunday 22/10/2017	4			6	5	3	1						
Monday 23/10/2017	5			7	5	4		1	1	0.3	1	7.9981	0:11
Tuesday 24/10/2017	4			5	4	4							
Wednesday 25/10/2017	4			8	4	4							0:01
Thursday 26/10/2017	5			10	7	5		1	1	0.3	1	7.5	0:03
Friday 27/10/2017	3			5	4	2							
Saturday 28/10/2017	1			4	4	1							
Sunday 29/10/2017	5			7	4	5		1	1	0.3	1	7.7306	0:04
Monday 30/10/2017	4			6	5	4							0:01
Summary	4.2/day	0m	0.0/day	7.1/day	69.7%	56.6%	1.0%	5	5	0.3U /fill	5	7.7U/fill	27m

Partial day Suspend Suspend On Low Suspend Before Low Note: Partial days will not be included in summary averages. Days on which a time change occurred are considered to be partial days.


Breakfa
Lunch
Dinner
Glucose (mmol/L)
Carbs (g)
Insulin (U/hr)
Tuesday 17/10
Wednesday 18/10
Thursday 19/10
Friday 20/10
Saturday 21/10
Sunday 22/10
Monday 23/10
Tuesday 24/10
Wednesday 25/10
Thursday 26/10
Friday 27/10
Saturday 28/10
Sunday 29/10
Monday 30/10
Sensor trace
Interrupted
BG reading
Off chart
Basal
Temp basal
Bolus
Suspend
Suspend On Low
Suspend Before Low
Time change
Injected insulin (U)
Exercise
Other

How would you manage this?

Basal 2 (active)

24-Hour Total	21.425 U

Time	U/Hr
0:00	0.725
2:00	0.725
4:00	0.900
7:30	0.900
9:00	0.900
11:00	0.900
16:00	0.975
21:00	0.950

Bolus

Bolus Wizard	On
Units	g, mmol/L
Active Insulin Time (h:mm)	3:00
Maximum Bolus	16.0 U

Easy Bolus	Off
Bolus Increment	0.1 U
Bolus Speed	Standard
Dual/Square	Off/Off

Carbohydrate Ratio (g/U)

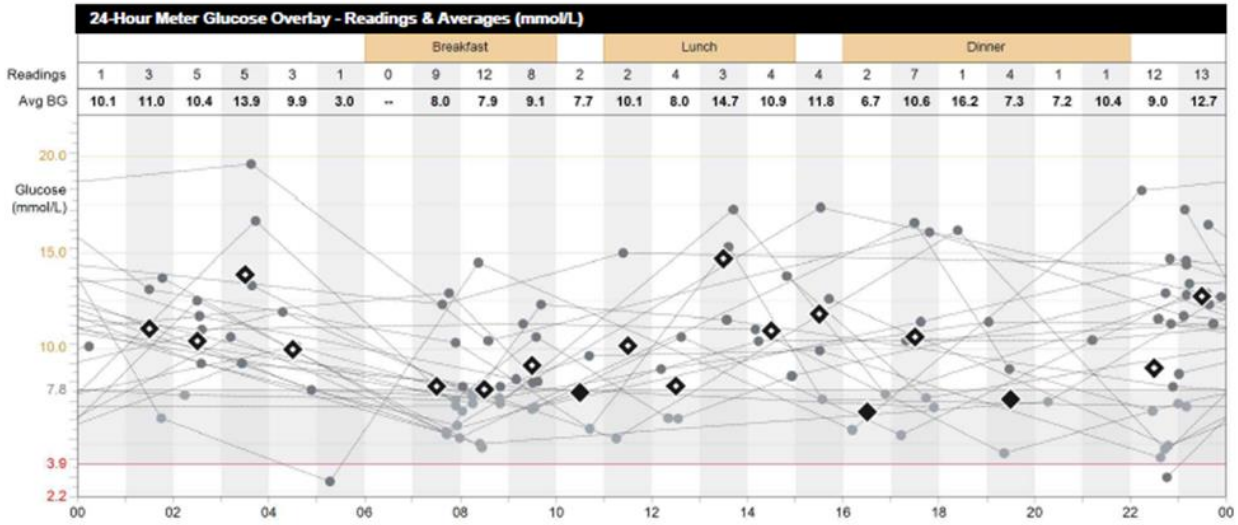
Time	Ratio
0:00	10.0
18:00	9.0
20:30	10.0

Insulin Sensitivity (mmol/L per U)

Time	Sensitivity
0:00	2.8

Blood Glucose Target (mmol/L)

Time	Low	High
0:00	6.0	7.5
7:30	5.0	7.0



Statistics	23/07 - 19/08	
Avg BG (mmol/L)	9.9 ± 3.8	
BG Readings	107	3.8/day
Readings Above Target	68	64%
Readings Below Target	2	2%
Sensor Avg (mmol/L)	--	
Avg AUC > 7.8 (mmol/L)	--	--
Avg AUC < 3.9 (mmol/L)	--	--

Avg Daily Carbs (g)	*149 ± 33*	
Carbs/Bolus Insulin (g/U)	8.1	

Avg Total Daily Insulin (U)	39.76 ± 4.2	
Avg Daily Basal (U)	21.40	54%
Avg Daily Bolus (U)	18.36	46%

Pre

Basal 1 (active)

24-Hour Total	20.600 U

Time	U/Hr
0:00	0.725
2:00	0.750
3:00	0.725
4:00	0.775
7:30	0.925
9:00	0.900
11:00	0.825
16:00	0.900
17:00	0.975
21:00	0.950

Bolus

Bolus Wizard	On	Easy Bolus	Off
Units	g, mmol/L	Bolus Increment	0.1 U
Active Insulin Time (h:mm)	4:00	Bolus Speed	Standard
Maximum Bolus	16.0 U	Dual/Square	Off/Off

Carbohydrate Ratio (g/U)

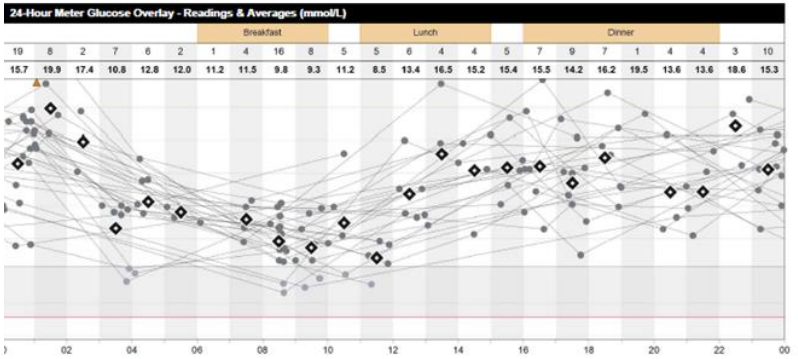
Time	Ratio
0:00	12.0
11:00	10.0
14:30	9.0
21:00	13.0

Insulin Sensitivity (mmol/L per U)

Time	Sensitivity
0:00	3.2
7:30	2.6
22:00	3.2

Blood Glucose Target (mmol/L)

Time	Low	High
0:00	6.0	7.5
7:30	5.0	7.0



Statistics	17/10 - 19/11	
Avg BG (mmol/L)	13.8 ± 4.0	
BG Readings	147	4.3/day
Readings Above Target	138	94%
Readings Below Target	--	0%
Sensor Avg (mmol/L)	--	
Avg AUC > 7.8 (mmol/L)	--	--
Avg AUC < 3.9 (mmol/L)	--	--

Avg Daily Carbs (g)	*178 ± 40*	
Carbs/Bolus Insulin (g/U)	7.7	

Avg Total Daily Insulin (U)	43.63 ± 5.2	
Avg Daily Basal (U)	20.52	47%
Avg Daily Bolus (U)	23.11	53%

Post

Basal 2 (active)

24-Hour Total	21.425 U

Time	U/Hr
0:00	0.725
2:00	0.725
4:00	0.900
7:30	0.900
9:00	0.900
11:00	0.900
16:00	0.975
21:00	0.950

Bolus

Bolus Wizard	On	Easy Bolus	Off
Units	g, mmol/L	Bolus Increment	0.1 U
Active Insulin Time (h:mm)	3:00	Bolus Speed	Standard
Maximum Bolus	16.0 U	Dual/Square	Off/Off

Carbohydrate Ratio (g/U)

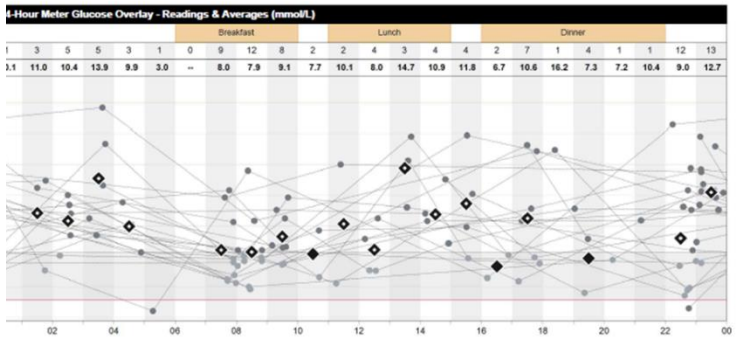
Time	Ratio
0:00	10.0
18:00	9.0
20:30	10.0

Insulin Sensitivity (mmol/L per U)

Time	Sensitivity
0:00	2.8

Blood Glucose Target (mmol/L)

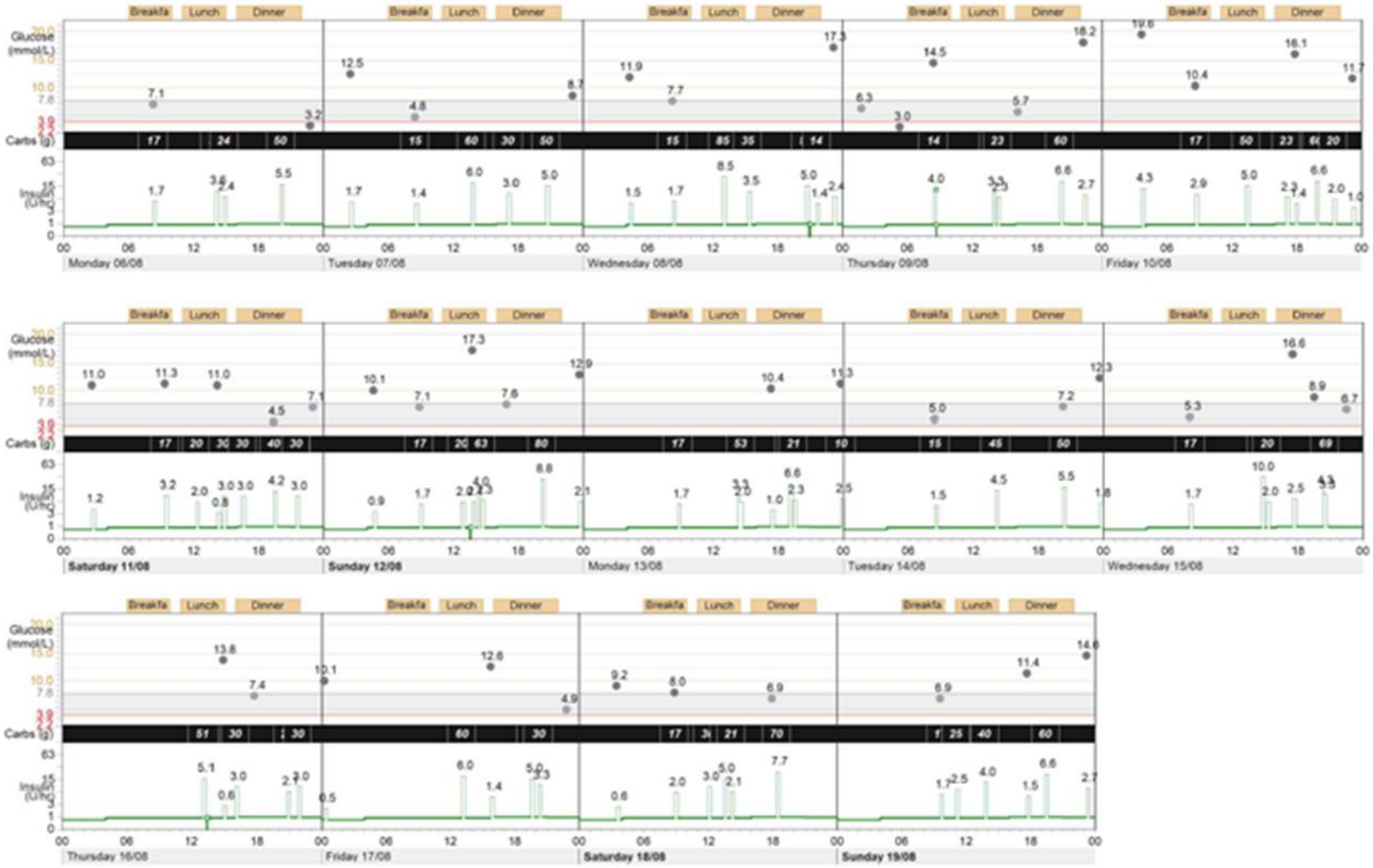
Time	Low	High
0:00	6.0	7.5
7:30	5.0	7.0



Statistics	23/07 - 19/08	
Avg BG (mmol/L)	9.9 ± 3.8	
BG Readings	107	3.8/day
Readings Above Target	68	64%
Readings Below Target	2	2%
Sensor Avg (mmol/L)	--	
Avg AUC > 7.8 (mmol/L)	--	--
Avg AUC < 3.9 (mmol/L)	--	--

Avg Daily Carbs (g)	*149 ± 33*	
Carbs/Bolus Insulin (g/U)	8.1	

Avg Total Daily Insulin (U)	39.76 ± 4.2	
Avg Daily Basal (U)	21.40	54%
Avg Daily Bolus (U)	18.36	46%


Breakfa
Lunch
Dinner
Glucose (mmol/L)
Carbs (g)
Insulin (U/hr)
Monday 06/08
Tuesday 07/08
Wednesday 08/08
Thursday 09/08
Friday 10/08
Saturday 11/08
Sunday 12/08
Monday 13/08
Tuesday 14/08
Wednesday 15/08
Thursday 16/08
Friday 17/08
Saturday 18/08
Sunday 19/08
Sensor trace
Interrupted
BG reading
Off chart
Basal
Temp basal
Bolus
Suspend
Suspend On Low
Suspend Before Low
Time change
Injected insulin (U)
Exercise
Other

TJ 45F Head-teacher

- T1DM aged 40 – recently moved to area already using CSII
- Blood glucose control very erratic, HbA1c 85 mmol/mol, but frequent episodes hypoglycaemia and loss awareness
- Added CGM with dramatic improvement in hypoglycaemia awareness and reduction in hypoglycaemia frequency
- HbA1c fallen to 70 mmol/mol
- Weight 65 kg

Basal

Maximum Basal Rate	2.00 U/hr
Temp Basal Type	Percent of Basal

Standard (active)	
24-Hour Total	14.850 U

TIME	U/hr
0:00	0.475
2:00	0.400
7:00	0.700

Pattern A	
24-Hour Total	–

TIME	U/hr
–	–

Pattern B	
24-Hour Total	–

TIME	U/hr
–	–

Bolus

Maximum Bolus	10.0 U
Dual/Square (Variable)	On
Blood Glucose Reminder	Off

Easy (Audio) Bolus	On
Entry (Step)	0.20 U

Bolus Wizard	On
Units	g, mmol/L
Active Insulin Time (h:mm)	4:00
Insulin Concentration	–

Missed Bolus Reminder	Off

Start (h:mm)	End (h:mm)
–	–

Carbohydrate Ratio (g/U)

TIME	Ratio
0:00	40.0
6:00	10.0
12:00	25.0
18:00	18.0

Insulin Sensitivity (mmol/L per U)

TIME	Sensitivity
0:00	7.2
8:00	4.0
17:00	4.5

Blood Glucose Target (mmol/L)

TIME	Low	High
0:00	5.0	6.0

Notes

Sensor

Sensor	On
Transmitter ID	2509106
BG Units	mmol/L

Glucose Alerts	On	
TIME	Low (mmol/L)	High (mmol/L)
0:00	4.0	15.0
7:00	4.5	15.0
Alert Repeat	0:20	1:00

Predictive Alert	On	
Low | High (mins)	15	30

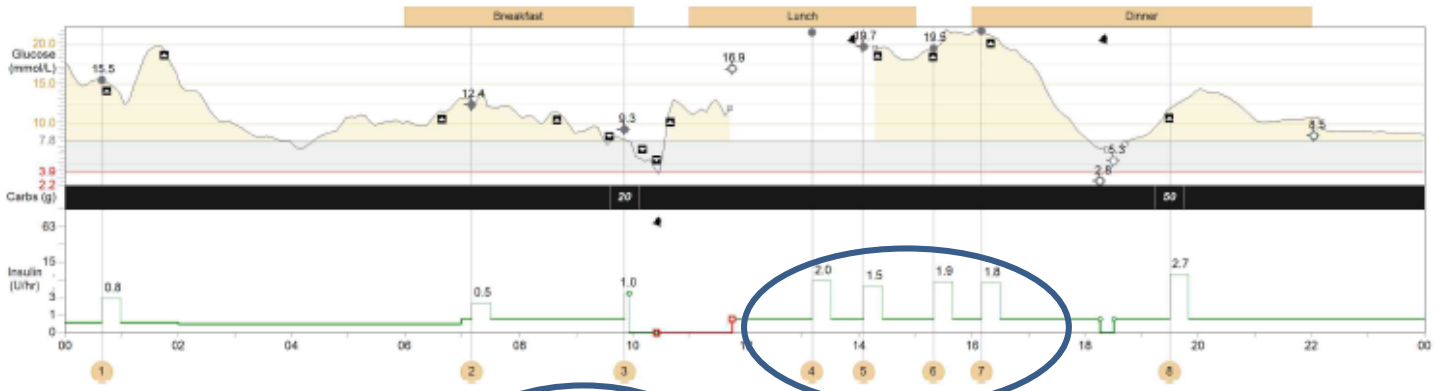
Rate Alert: Fall | Rise (mmol/L/min)	Off	Off

AUC Limit: Low | High (mmol/L)	3.9	10.0
Missed Data/Weak Signal (h:mm)	0:30	
Graph Timeout (h:mm)	0:02	

Auto Calibration	Off
Calibration Reminder (h:mm)	1:00
Calibration (Alert) Repeat (h:mm)	0:30

Utilities

Alert Type	Vibrate
Low Suspend (mmol/L)	4.5
Low Reservoir Warning	Insulin Units
Amount	20 U



Bolus Events										
Bolus Event	1	2	3	4	5	6	7	8		
Time	00:38	07:11	09:5	13:10	14:04	15:18	16:09	19:29		
Bolus Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal		
Delivered Bolus Norm (U)	0.800	0.500	00	2.00	1.50	1.90	1.80	2.70		
+ Square Portion (U, h:mm)	–	–	–	–	–	–	–	–		
Recommended Bolus (U)	1.80	1.80	2.7	4.20	2.20	1.90	1.80	2.70		
Difference (U)	-1.000	-1.300	-1.700	-2.200	-0.700	–	–	–		
Carbs (g)	–	–	20	–	–	–	–	60		
Carb Ratio Setting (g/U)	40.0	10.0	10.0	25.0	25.0	25.0	25.0	18.0		
Food Bolus (U)	–	–	2.00	–	–	–	–	2.70		
BG (mmol/L)	15.5	12.4	8.3	21.5	19.7	18.5	21.7	–		
BG Target Setting (mmol/L)	5.0 - 6.0	5.0 - 6.0	5.0 - 6.0	5.0 - 6.0	5.0 - 6.0	5.0 - 6.0	5.0 - 6.0	5.0 - 6.0		
Insulin Sensitivity Setting (mmol/L per U)	4.5	3.5	3.5	3.5	3.5	3.5	3.5	4.5		
Correction Bolus (U)	2.10	1.80	0.900	4.40	3.90	3.80	4.40	–		
Active Insulin (U)	0.300	–	0.200	0.200	1.70	1.90	2.60	0.200		

Statistics	22/03		22/03 - 30/04	
Avg BG (mmol/L)	13.9		12.3 ± 4.2	
BG Readings	11		420	10.4/day
Readings Above Target	9	82%	357	85%
Readings Below Target	1	9%	12	3%
Sensor Avg (mmol/L)	12.1 ± 4.0		10.7 ± 3.6	
Avg AUC > 7.8 (mmol/L)	4.42	0d 21h	3.29	38d 4h
Avg AUC < 3.9 (mmol/L)	0.00	0d 21h	0.00	38d 4h
Daily Carbs (g)	70		107 ± 44	
Carbs/Bolus Insulin (g/U)	5.7		9.7	
Total Daily Insulin (U)	25.6		24.2 ± 2.8	
Daily Basal (U)	13.4	52%	13.6	56%
Daily Bolus (U)	12.2	48%	10.5	44%
Fills	–	–	23	159.5U

Sensor trace · BG reading · Linked BG · Basal · Bolus · Suspend · Time change · Exercise · Glucose alert
Interrupted · Off chart · Calibration BG · Temp basal · Pump rewind · Low Suspend · Injected Insulin (U) · Other · Alarm

Bolus Events

Bolus Event	1	2	3	4	5	6	7	8	9	10
Time	08:28	11:29	13:57	14:58	15:58	19:19	19:55	21:16	22:33	22:54
Bolus Type	Normal	Normal	Dual	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Delivered Bolus Norm (U)	1.00	1.40	1.50	0.500	0.500	2.20	1.60	0.500	1.00	0.500
+ Square Portion (U, h:mm)	–	–	0.500, 2:00	–	–	–	–	–	–	–
Recommended Bolus (U)	1.30	1.40	2.00	0.500	1.10	2.20	1.60	0.300	1.60	0.900
Difference (U)	-0.300	–	–	–	-0.600	–	–	0.200	-0.600	-0.400
Carbs (g)	–	*14*	*60*	–	–	*40*	*30*	–	–	–
Carb Ratio Setting (g/U)	10.0	10.0	25.0	25.0	25.0	18.0	18.0	18.0	18.0	18.0
Food Bolus (U)	–	1.40	2.00	–	–	2.20	1.60	–	–	–
BG (mmol/L)	**11.9**	–	**6.8**	**16.8**	**18.7**	**6.4**	**11.8**	**17.0**	**18.6**	**18.9**
BG Target Setting (mmol/L)	5.0 - 6.0	5.0 - 6.0	5.0 - 6.0	5.0 - 6.0	5.0 - 6.0	5.0 - 6.0	5.0 - 6.0	5.0 - 6.0	5.0 - 6.0	5.0 - 6.0
Insulin Sensitivity Setting (mmol/L per U)	4.0	4.0	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5
Correction Bolus (U)	1.40	–	–	2.40	2.60	–	1.20	2.40	2.80	2.80
Active Insulin (U)	0.100	0.200	0.400	1.60	1.50	0.100	2.10	2.10	1.20	1.90

*Note: More than 10 boluses occurred. The 10 largest boluses are shown.

Statistics	12/04		22/03 - 30/04	
Avg BG (mmol/L)	12.1		12.3 ± 4.2	
BG Readings	16		420	10.4/day
Readings Above Target	11	69%	357	85%
Readings Below Target	1	6%	12	3%
Sensor Avg (mmol/L)	10.8 ± 3.8		10.7 ± 3.8	
Avg AUC > 7.8 (mmol/L)	3.16	1d 0h	3.29	38d 4h
Avg AUC < 3.8 (mmol/L)	0.00	1d 0h	0.00	38d 4h

Daily Carbs (g)	*174*		*107 ± 44*	
Carbs/Bolus Insulin (g/U)	14.4		9.7	

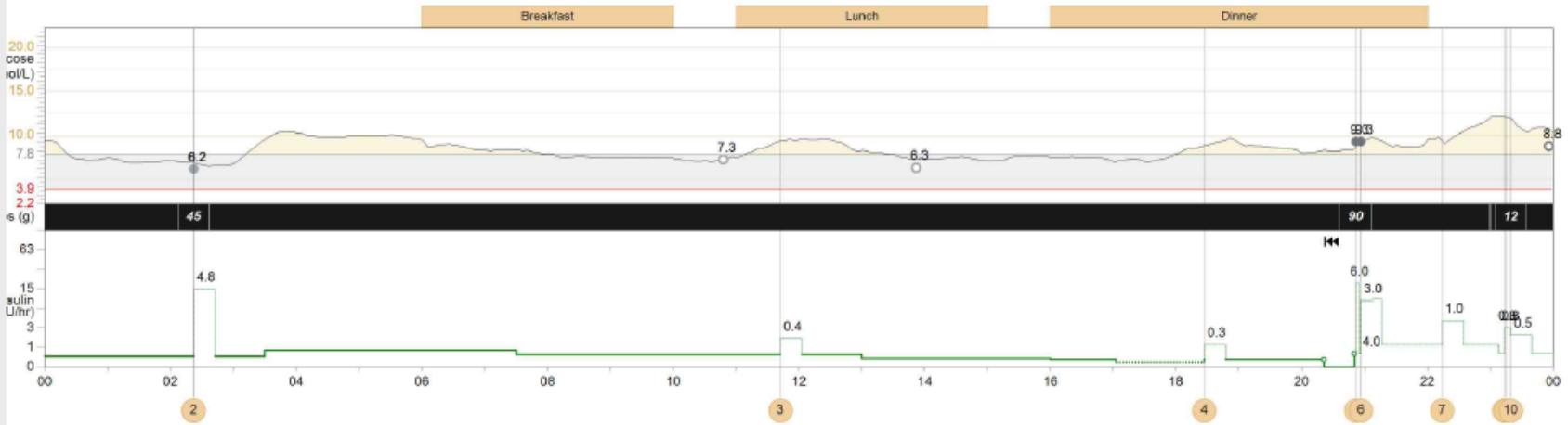
Total Daily Insulin (U)	25.1		24.2 ± 2.8	
Daily Basal (U)	13.0	52%	13.6	56%
Daily Bolus (U)	12.1	48%	10.5	44%
Fills	–	–	23	159.5U

Sensor trace · BG reading · Linked BG · Basal · Bolus · Suspend · Time change · Exercise · Glucose alert
Interrupted · Off chart · Calibration BG · Temp basal · Pump rewind · Low Suspend · Injected Insulin (U) · Other · Alarm

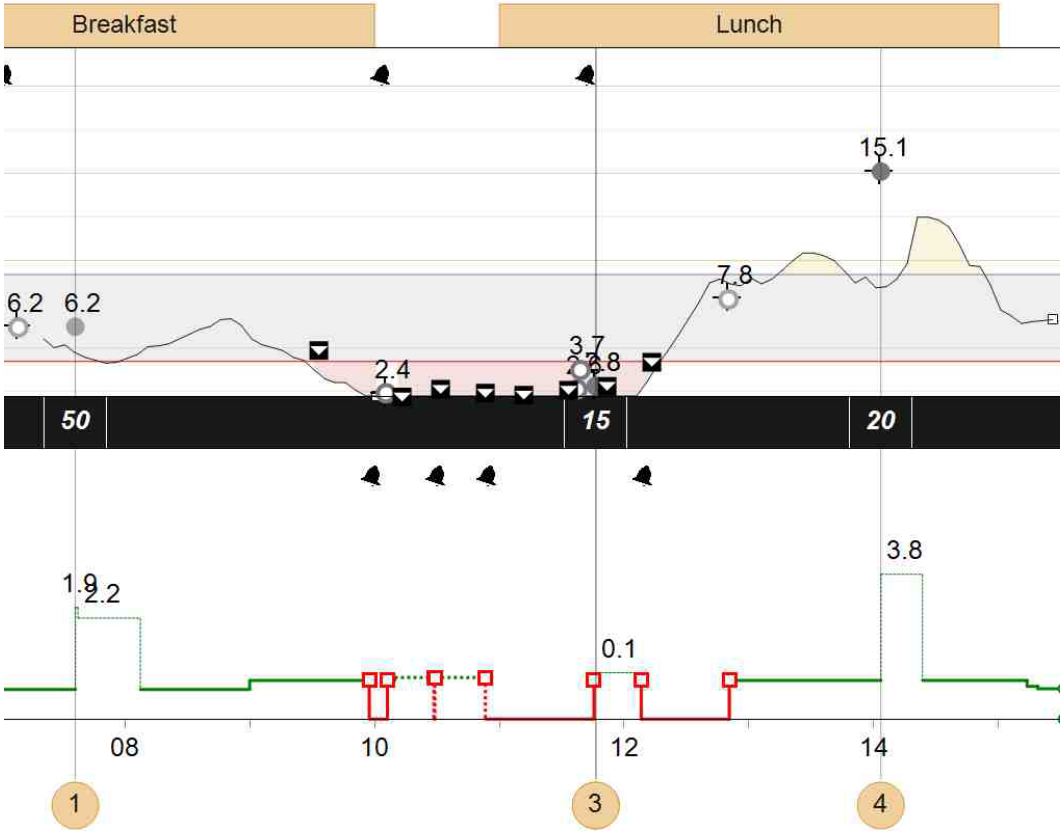
Recommendation

- “Reboot” settings:
  - Total daily dose @ 0.5x65 = 32.5 kg
  - Basal rate 0.7 u/h = 16.8 u/d
  - IC @350/32.5 = 11
  - ISF @130/32.5 = 4
- Trust wizard settings and do not over-ride except for known confounders eg exercise
- Avoid stacking insulin boluses
- Review LGS management
- ?Increase duration active insulin to 6 hours

Any guesses what's happening on this day?

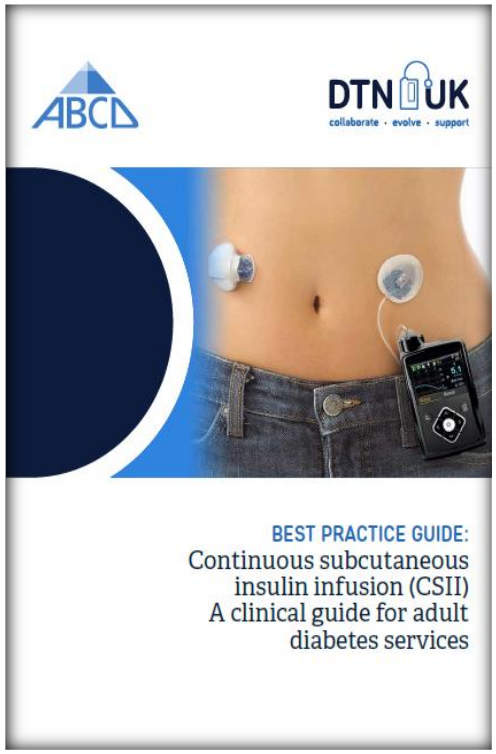


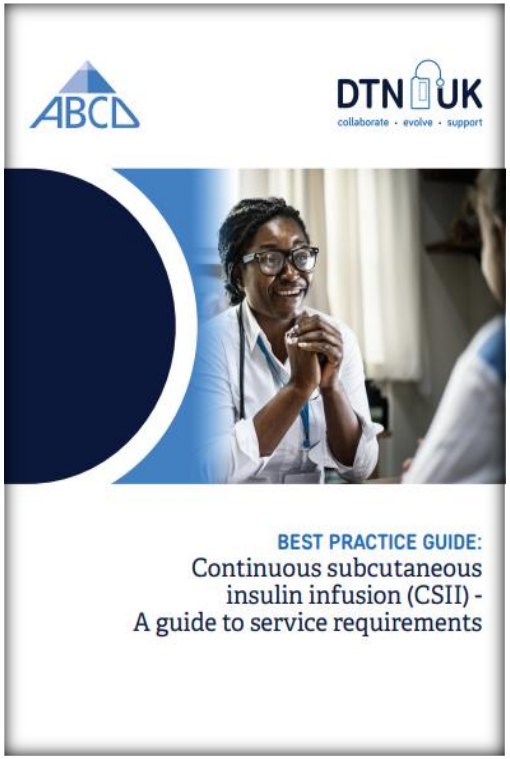
CR 40F Man vs machine

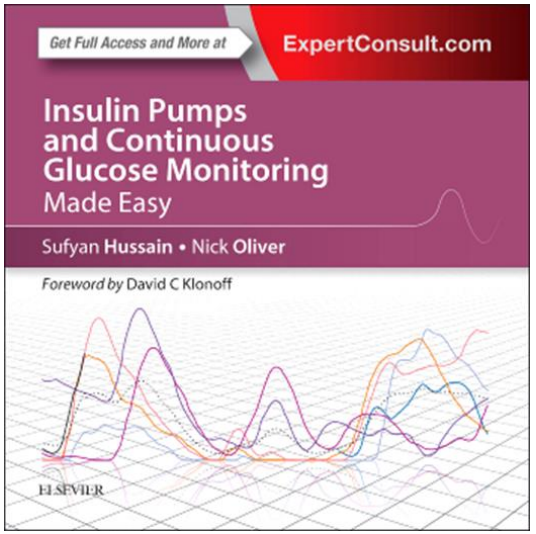


Best Practice Guides

www.DTN-UK.care







DTN UK

@DrPH47
@sugarydoc

Troubleshooting scenarios

Mr SL

- 27 year old T1DM
- Night shifts
- Previous hypo unawareness
- Currently on Medtronic 640G PLGS
- HbA1c 8.4%

Basal 1 (active)

24-Hour Total	31.200 U

Time	U/Hr
0:00	1.30

Bolus

Bolus Wizard	On
Units	g, mmol/L
Active Insulin Time (h:mm)	5:00
Maximum Bolus	30.0 U

Easy Bolus	Off
Bolus Increment	0.1 U
Bolus Speed	Standard
Dual/Square	Off/Off

Carbohydrate Ratio (g/U)

Time	Ratio
0:00	10.0

Insulin Sensitivity (mmol/L per U)

Time	Sensitivity
0:00	2.5

Blood Glucose Target (mmol/L)

Time	Low	High
0:00	5.5	7.5

Low Alerts — On (Snooze 1:00)

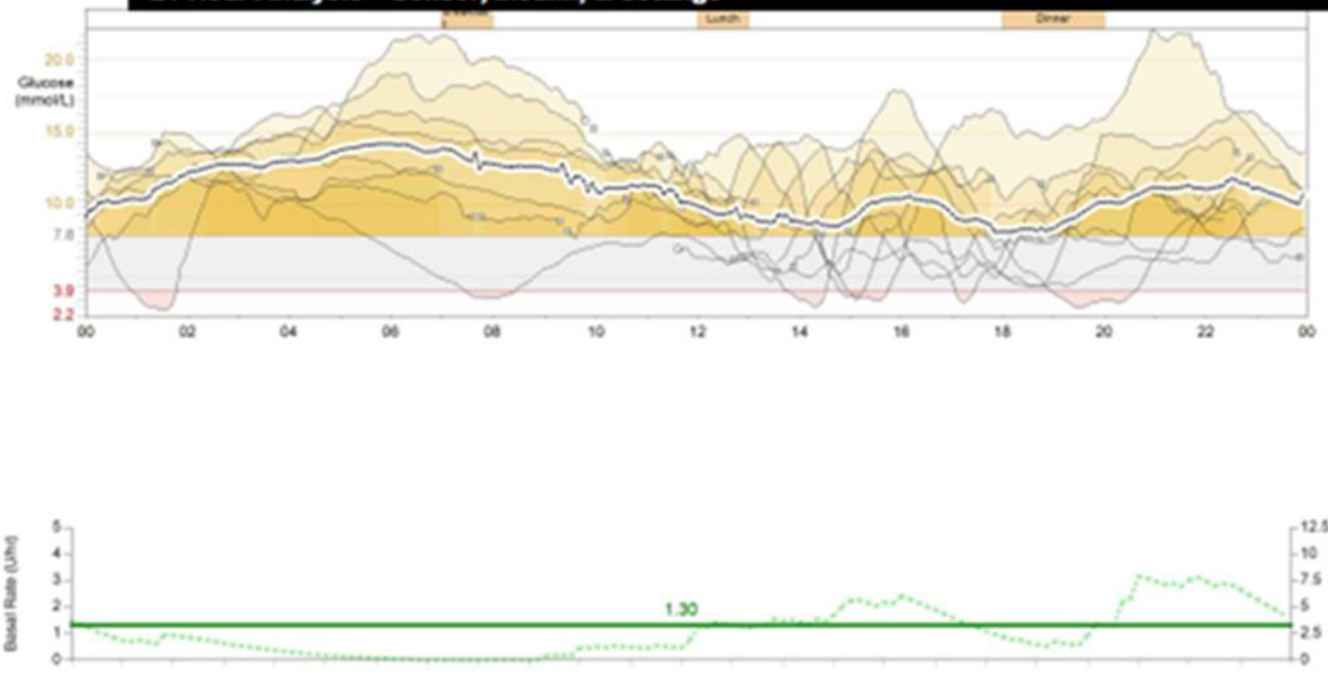
Start Time	Low (mmol/L)	Suspend	Alert On Low	Alert Before Low	Resume Basal Alert
0:00	3.4	Before Low	x		

Statistics	22/06 - 01/07	
Avg BG (mmol/L)	11.7 ± 3.6	
BG Readings	20	2.0/day
Readings Above Target	17	85%
Readings Below Target	--	0%
Sensor Avg (mmol/L)	10.9 ± 3.8	
Avg AUC > 7.8 (mmol/L)	3.52	8d 11h
Avg AUC < 3.9 (mmol/L)	0.02	8d 11h

Avg Daily Carbs (g)	*182 ± 71*	
Carbs/Bolus Insulin (g/U)	6.6	

Avg Total Daily Insulin (U)	54.16 ± 8.8	
Avg Daily Basal (U)	29.28	54%
Avg Daily Bolus (U)	24.88	46%

24-Hour Analysis – Sensor, Insulin, & Settings



Statistics	
Avg BG	11.7 ± 3.6mmol/L
Estimated A1C	8.5%
BG Readings	2.0 per day
Carbs Entered	182 ± 71g per day

Hypoglycemic Patterns (4)**	
	13:51-15:41 (2)
Time Period	00:56-01:46 (1)
	07:32-08:22 (1)

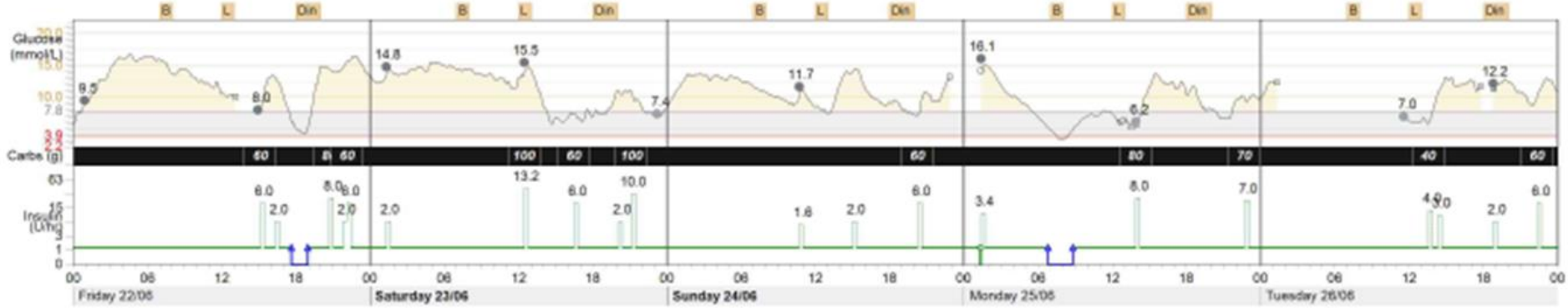
Hyperglycemic Patterns (2)	
	18:20-14:50
Time Period	15:00-18:00

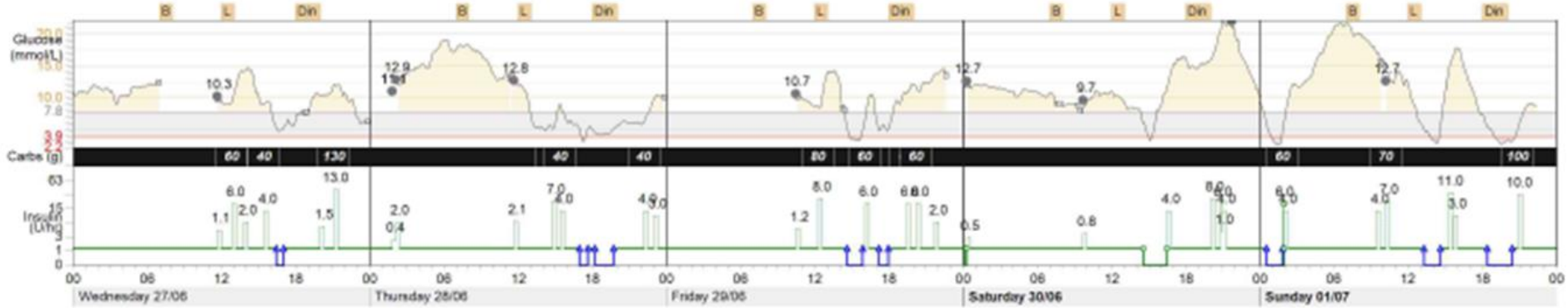
Pump Use	Per Day
Insulin TDD	54.2 ± 8.8U
Basal/Bolus Ratio	54 / 46
Manual Boluses	6.7U (1.9 boluses)
Bolus Wizard	18.2U (3.6 boluses)
Food	16.4U (2.4 boluses)
Correction	2.4U (1.3 boluses)
Override (+)	0.2U (0.3 boluses)
Override (-)	0.0U (0.1 boluses)
Total Suspends	1h 28m (1.4 events)
Suspend On Low	–
Suspend Before Low	1h 16m (1.0 events)

Sensor Use	
Avg SG	10.9 ± 3.8 mmol/L
Wear Duration	5d 22h per week
Low SG Alarms	0.8 per day
High SG Alarms	0.0 per day

	Glucose Measurements		Bolus Events					Fill Events					
	BG Readings	Sensor Duration (h:mm)	Manual Boluses	Bolus Wizard Events	With Food	With Correction	Overridden	Rewind	Cannula Fills	Cannula Amount (U)	Tubing Fills	Tubing Amount (U)	Suspend Duration (h:mm)
Friday 22/06/2018	2	22:15	2	3	3								1:19
Saturday 23/06/2018	3	24:00	2	3	3	1							
Sunday 24/06/2018	1	22:55	1	2	1	1							
Monday 25/06/2018	2	22:25		3	2	1		1	1	0.9	1	1.6605	2:03
Tuesday 26/06/2018	2	12:50	1	4	2	1	1						
Wednesday 27/06/2018	1	19:15	2	4	3	1							0:36
Thursday 28/06/2018	4	21:40	1	7	3	4	2						2:10
Friday 29/06/2018	1	12:05	1	5	4	1							2:01
Saturday 30/06/2018	3	23:45	5	2		2	1	1	1	0.9	1	1.1346	1:58
Sunday 01/07/2018	1	22:10	4	3	3	1							4:39
Summary	2.0/day	8d 11h 20m	1.9/day	3.6/day	66.7%	36.1%	11.1%	2	2	0.9U /fill	2	1.4U/fill	14h 46m

Partial day Suspend Suspend On Low Suspend Before Low Note: Partial days will not be included in summary averages. Days on which a time change occurred are considered to be partial days.


B L Din
Glucose (mmol/L)
Carbs (g)
Insulin (U/hr)
Friday 22/06
Saturday 23/06
Sunday 24/06
Monday 25/06
Tuesday 26/06

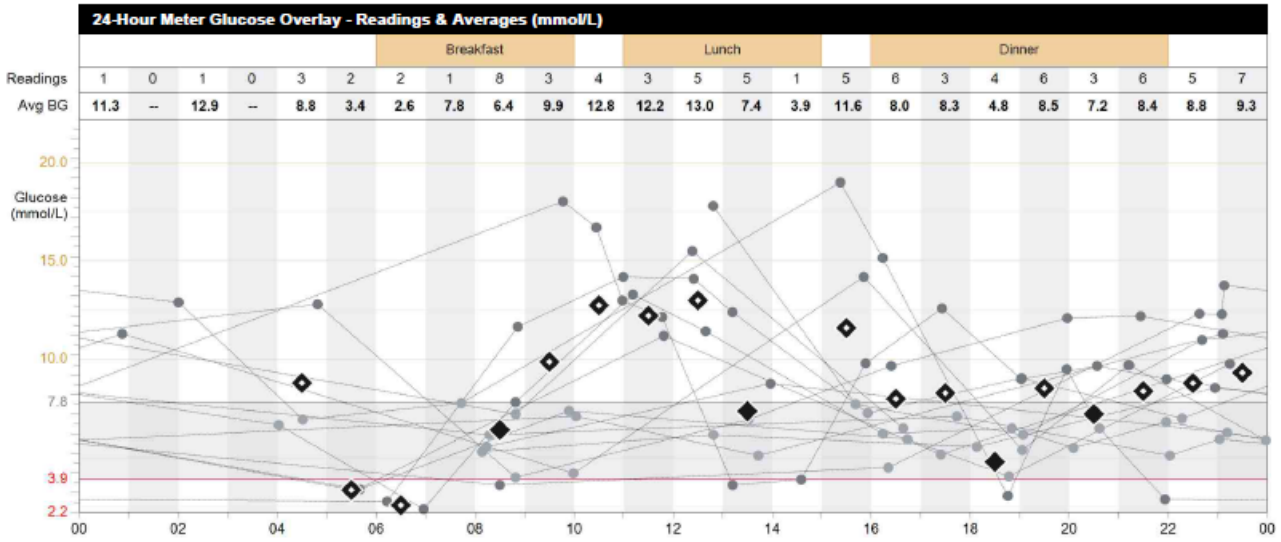

B L Din
Glucose (mmol/L)
Carbs (g)
Insulin (U/hr)
Wednesday 27/06
Thursday 28/06
Friday 29/06
Saturday 30/06
Sunday 01/07

Review data

- What adjustments would you advise?
- What are the treatment goals?

SC, 53F

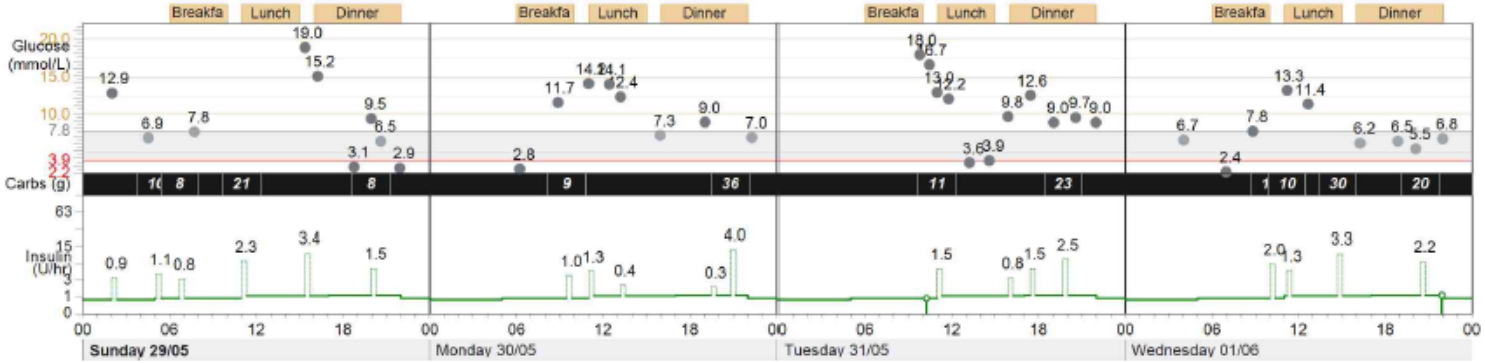
- Teacher
- T1DM for 30 years
- Retinopathy
- Renal stone – with non-functioning kidney
- HbA1c 60 mmol/mol
- Very erratic blood glucose levels
- Reluctant to change target BG range: 4.0-7.0 mmol/l



Statistics	19/05 - 02/06	
Avg BG (mmol/L)	8.7 ± 4.0	
BG Readings	84	5.6/day
Readings Above Target	40	48%
Readings Below Target	9	11%
Sensor Avg (mmol/L)	--	
Avg AUC > 7.8 (mmol/L)	--	--
Avg AUC < 3.9 (mmol/L)	--	--

Avg Daily Carbs (g)	53 ± 14	
Carbs/Bolus Insulin (g/U)	7.4	

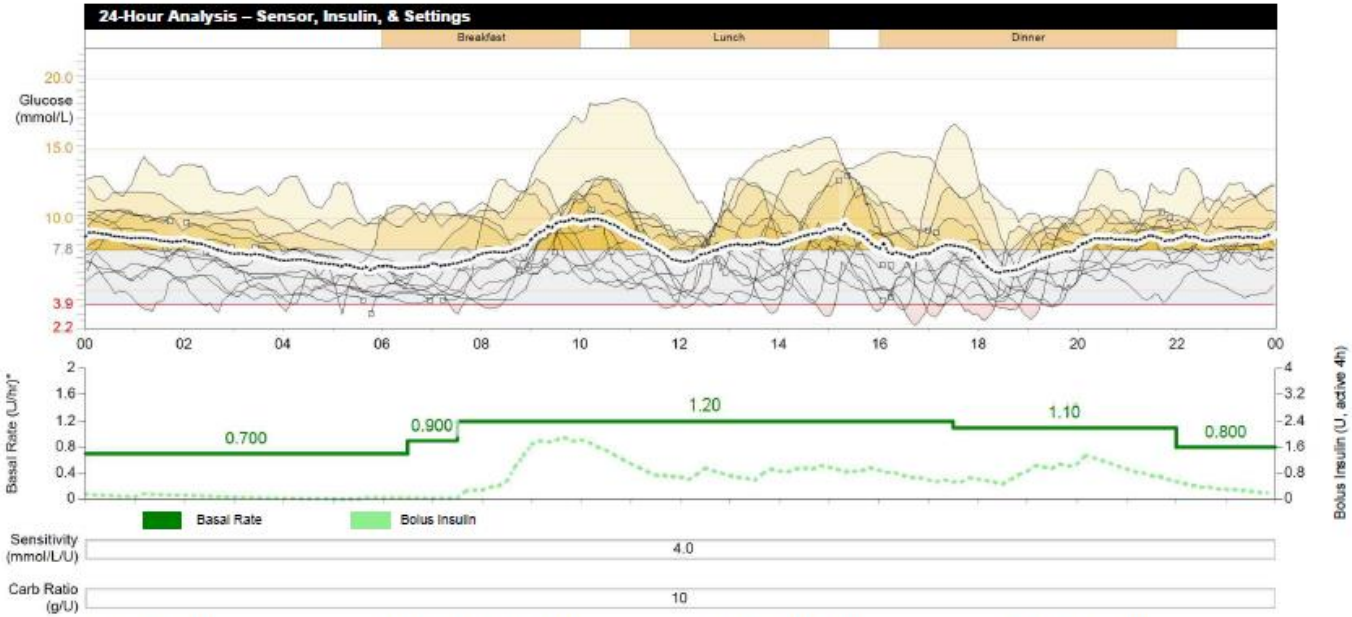
Avg Total Daily Insulin (U)	30.66 ± 1.5	
Avg Daily Basal (U)	23.50	77%
Avg Daily Bolus (U)	7.16	23%



SC, 55F

- Much happier
- Blood glucose control much less erratic
- HbA1c 50 mmol/mol

24-Hour Analysis – Sensor, Insulin, & Settings



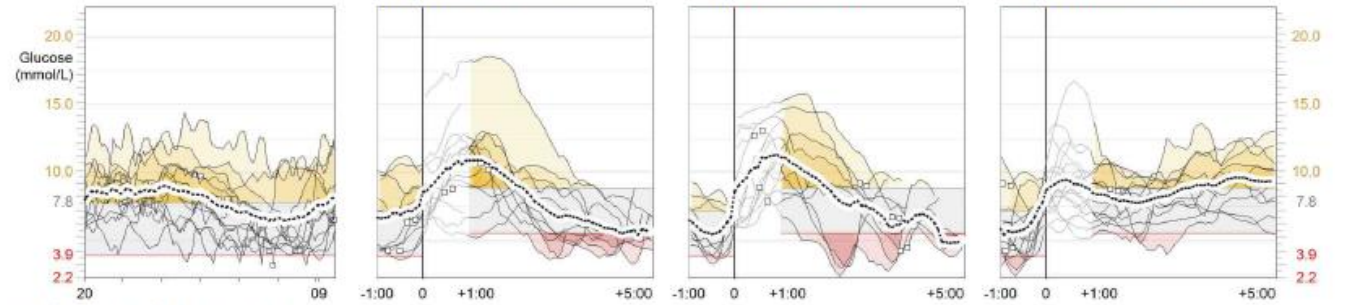
Bedtime to Wake-up

Bedtime: 20:00 - 00:00
Wake-up: 05:00 - 09:00

Breakfast: 06:00 - 10:00 (16)
Pre-meal SG Avg: 7.0 ± 2.2mmol/L
Post-meal SG Avg: 8.8 ± 2.0mmol/L
Avg Carbs: *19 ± 7g*
Avg Food Bolus: 1.9 ± 0.7U

Lunch: 11:00 - 15:00 (17)
Pre-meal SG Avg: 6.0 ± 1.3mmol/L
Post-meal SG Avg: 9.0 ± 1.9mmol/L
Avg Carbs: *12 ± 6g*
Avg Food Bolus: 1.2 ± 0.6U

Dinner: 16:00 - 22:00 (21)
Pre-meal SG Avg: 6.2 ± 1.6mmol/L
Post-meal SG Avg: 9.0 ± 1.6mmol/L
Avg Carbs: *12 ± 6g*
Avg Food Bolus: 1.2 ± 0.6U



* Most recent pump settings are displayed

Statistics	
Avg BG	8.3 ± 3.4mmol/L
Estimated A1C	6.6%
BG Readings	6.4 per day
Carbs Entered	59 ± 8g per day

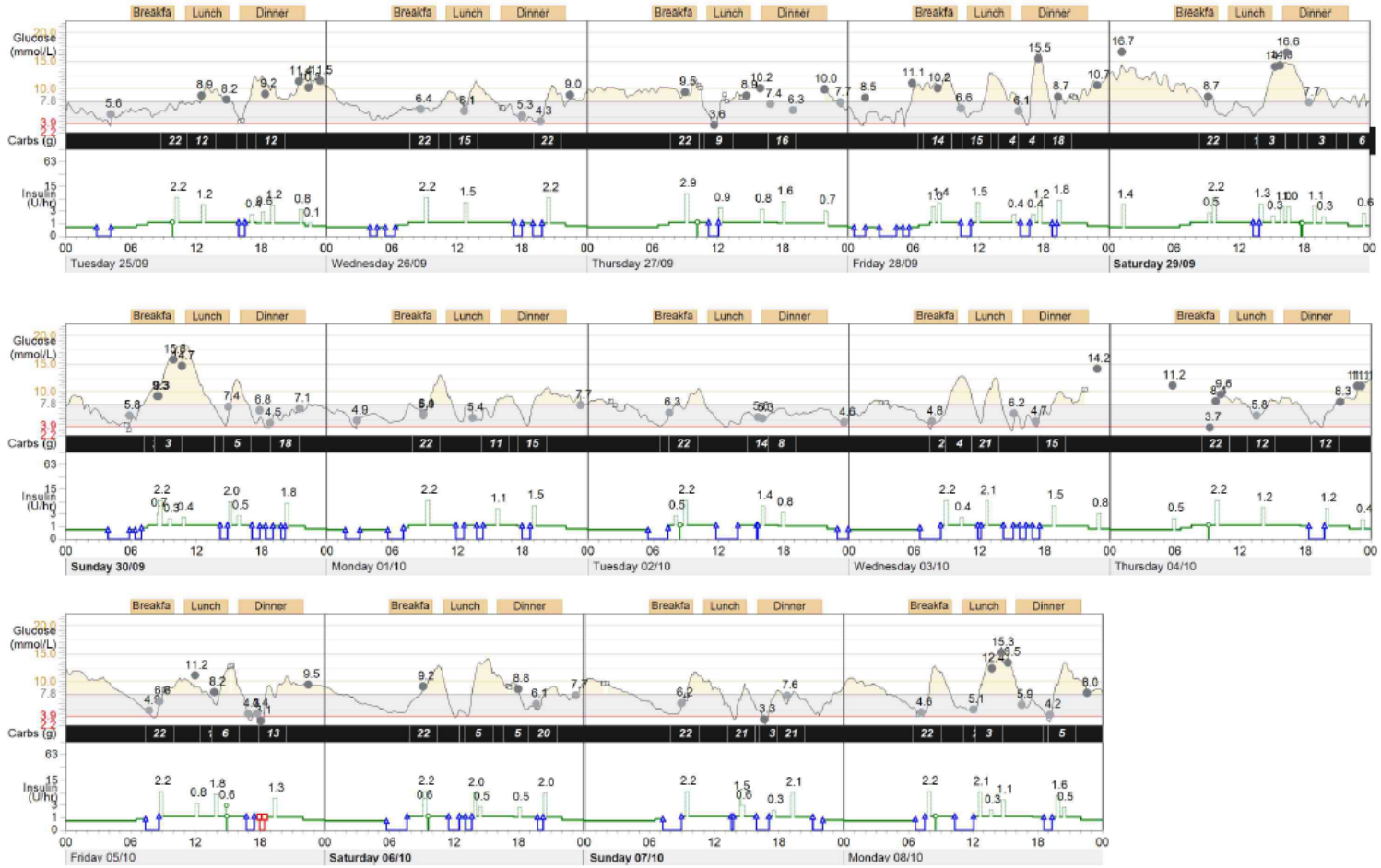
Hypoglycemic Patterns (2)	
	16:28-19:13 (4)
Time Period	07:58-08:23 (1)

Hyperglycemic Patterns (5)**	
	08:40-11:35
Time Period	23:00-02:45
	12:50-16:10

Pump Use	Per Day
Insulin TDD	27.4 ± 2.2U
Basal/Bolus Ratio	75 / 25
Manual Boluses	0.0U (0.0 boluses)
Bolus Wizard	6.8U (5.7 boluses)
Food	5.9U (4.4 boluses)
Correction	2.2U (1.9 boluses)
Override (+)	0.0U (0.0 boluses)
Override (-)	-0.4U (0.6 boluses)
Total Suspends	3h 20m (4.1 events)
Suspend On Low	2m (0.1 events)
Suspend Before Low	3h 17m (3.4 events)

Sensor Use	
Avg SG	8.0 ± 2.6 mmol/L
Wear Duration	6d 13h per week
Low SG Alarms	0.9 per day
High SG Alarms	0.9 per day

** Only highest priority shown.


Breakfa
Lunch
Dinner
Glucose (mmol/L)
Carbs (g)
Insulin (U/hr)
Tuesday 25/09
Wednesday 26/09
Thursday 27/09
Friday 28/09
Saturday 29/09
Sunday 30/09
Monday 01/10
Tuesday 02/10
Wednesday 03/10
Thursday 04/10
Friday 05/10
Saturday 06/10
Sunday 07/10
Monday 08/10
Sensor trace
BG reading
Basal
Bolus
Suspend
Time change
Exercise
Interrupted
Off chart
Temp basal
Suspend On Low
Injected insulin (U)
Other
Suspend Before Low

SC – settings

	2016 – CSII	2018 - SAP
HbA1c (mmol/mol)	60	50
Average Glucose (mmol/l)	8.8 ± 4.0 (CBG)	8.0 ± 2.6 (sensor)
CV (%)	45	32.5
TDD average (units)	30.66 ± 1.5	27.4 ± 2.2
Basal/bolus (%)	77/23	75/25
Programmed basal rate (units/d)	21.2	24
IC ratio	10	10
ISF	4	4
Target glucose	4.0-7.0	5.0-6.5