



CGM Masterclass: A Case Based Approach to CGM use in Primary Care

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DRAFT COPY

National Conference 2024

Disclosure for Julie Lewis

Attended sponsored meetings/ provided presentations for:

Sanofi, Eli Lilly, Boehringer Ingelheim, AstraZeneca,
Novo Nordisk, Napp, Roche, MORPh, Abbott

The views expressed here are my own.

Cases have been anonymised to maintain
confidentiality

This conference was developed by the PCDS in conjunction with OmniaMed Communications. The sponsoring companies have had no input into the conference agenda, speaker selection or presentations, with the exception of the symposium sessions, for which the respective sponsoring companies are fully responsible.



National Conference 2024

Disclosure for Sarah Gregory

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Case Study 1 – 89yr living in a nursing home

- Type 1 diabetes 49yrs - has always managed herself and completed DAFNE education 13yrs ago
- Has full mental capacity and ability to self manage
- Frustrated as nurses in home are now administering her insulin (although when she goes out with family she is ‘allowed’ to self administer)
- Food often restricted if glucose levels are deemed ‘high’

- On MDI regimen – Lantus 13units and Novorapid 6/6/6units (doses 'set' because of non-prescribing nurses in home)
- CHO counted at home (ratios of 1:10)
- On Freestyle Libre prior to admission to nursing home, and able to scan using her own phone
- Moderately frail – admitted to nursing home as poor mobility and lived alone
- Had been reviewed by community care home/nursing home practitioner who wanted to consider the possibility of patient self managing her insulin

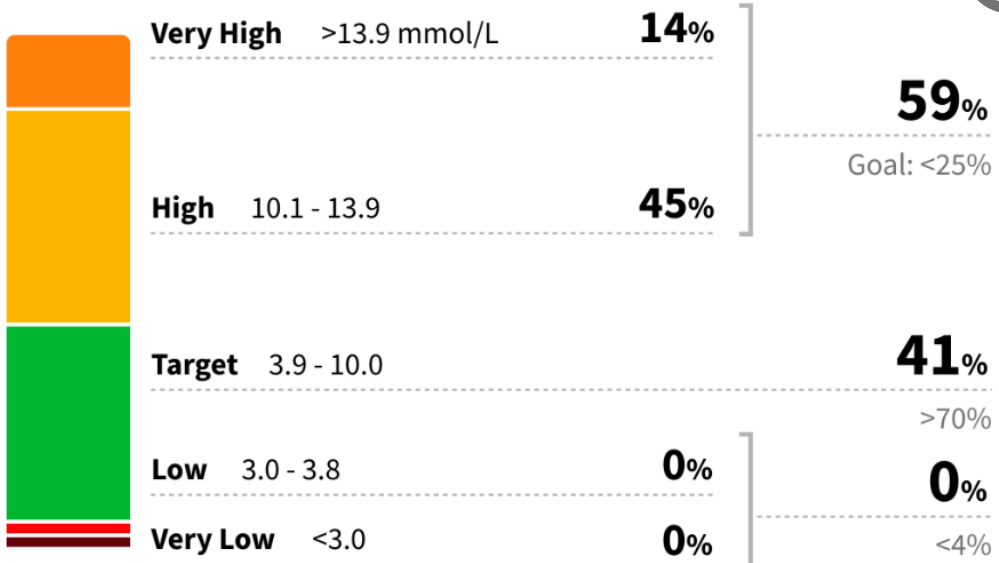
Glucose Pattern Insights

Generated: 26/07/2024 Page: 1 of 1

Selected dates: 13 Jul – 26 Jul 2024 (14 Days)

Time sensor active: **99%**

Time in Ranges



Glucose Statistics

Average Glucose
10.9 mmol/L Goal: ≤8.6 mmol/L

Glucose Management Indicator (GMI)
Approximate A1C level based on average CGM glucose level.
8.0% Goal: ≤7.0% | **64** mmol/mol Goal: ≤53 mmol/mol

DO NOT COPY

AGP Report

13 July 2024 - 26 July 2024 (14 Days)

LibreView

GLUCOSE STATISTICS AND TARGETS

13 July 2024 - 26 July 2024

14 Days

Time sensor active:

99%

Ranges And Targets For

Type 1 or Type 2 Diabetes

Glucose Ranges	Targets % of Readings (Time/Day)
Target Range 3.9-10.0 mmol/L	Greater than 70% (16h 48min)
Below 3.9 mmol/L	Less than 4% (58min)
Below 3.0 mmol/L	Less than 1% (14min)
Above 10.0 mmol/L	Less than 25% (6h)
Above 13.9 mmol/L	Less than 5% (1h 12min)
Each 5% increase in time in range (3.9-10.0 mmol/L) is clinically beneficial.	

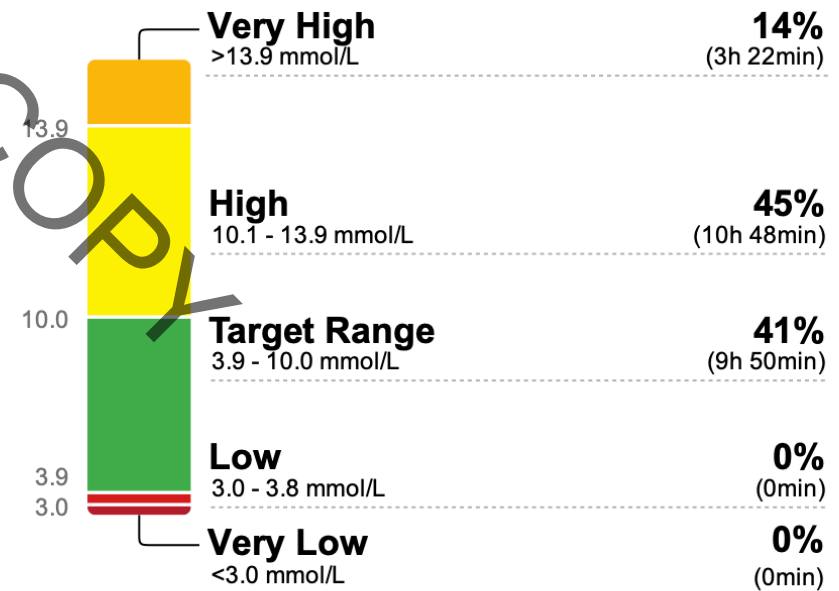
Average Glucose **10.9** mmol/L

Glucose Management Indicator (GMI) **8.0% or 64** mmol/mol

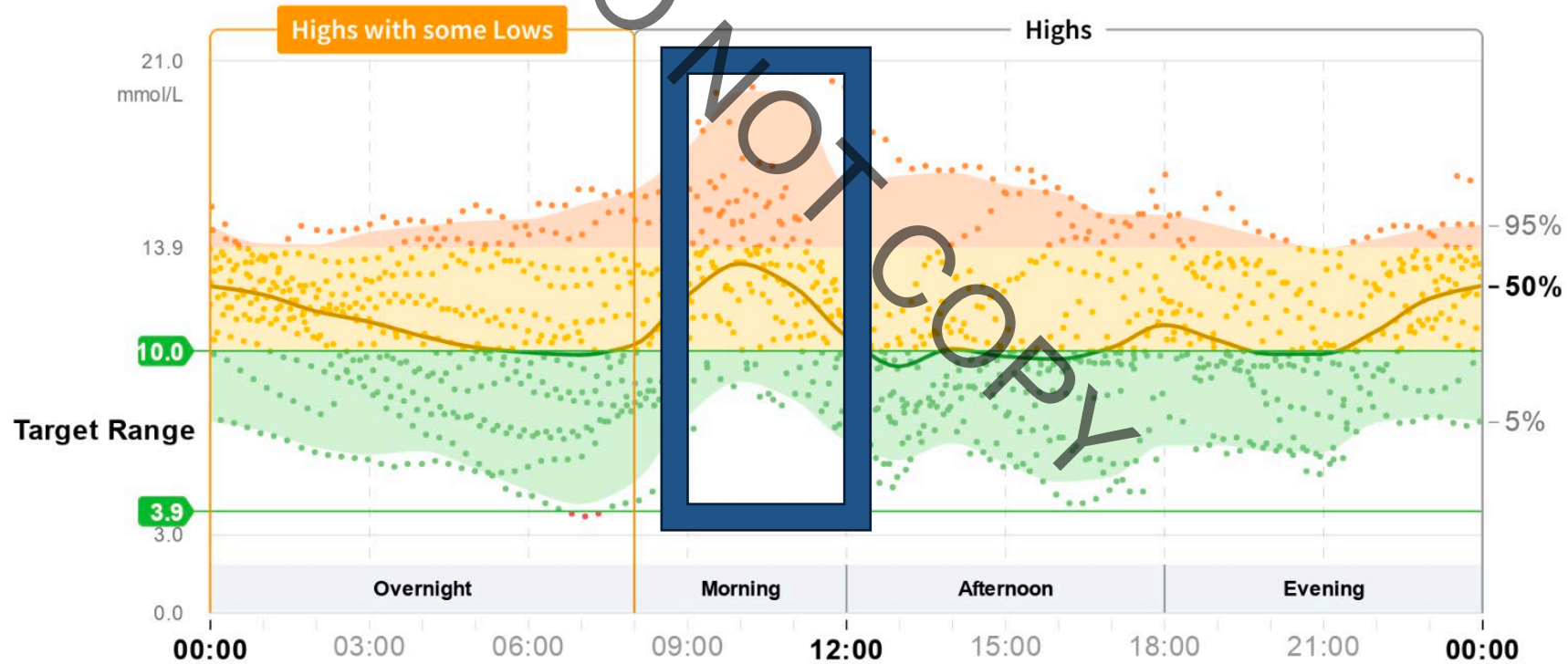
Glucose Variability **27.9%**

Defined as percent coefficient of variation (%CV); target ≤36%

TIME IN RANGES

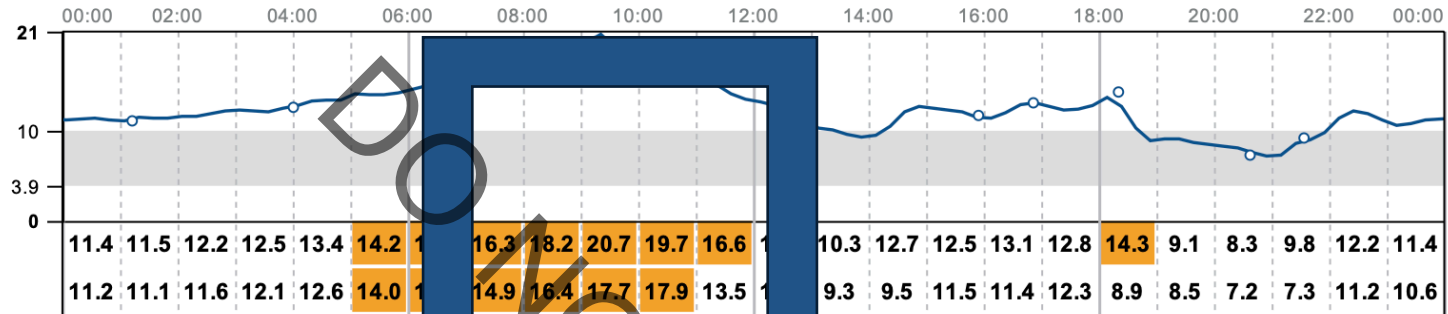


Glucose Patterns (14 Days)



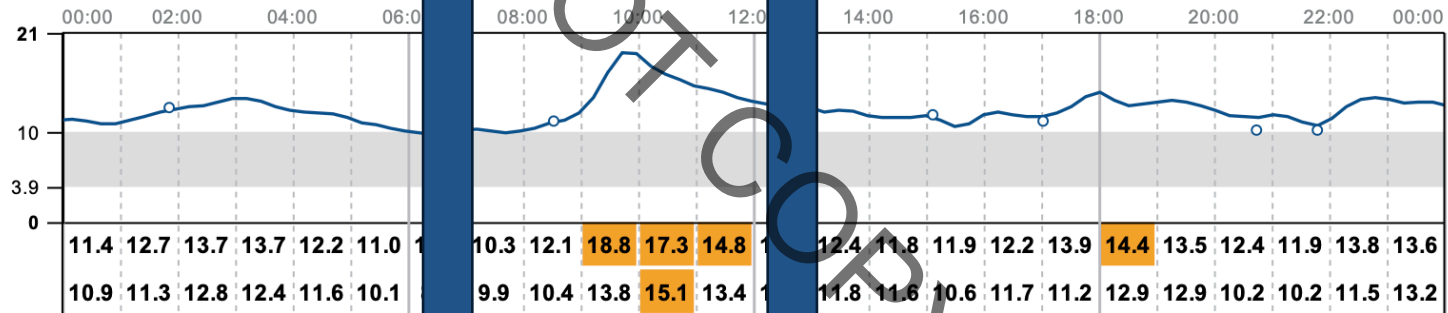
SAT 29 Jun

Glucose mmol/L
Max
Min



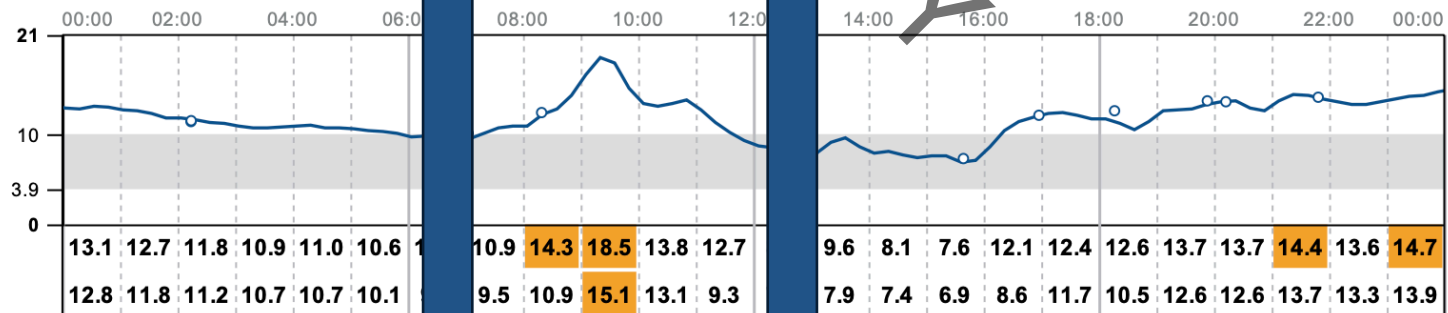
SUN 30 Jun

Glucose mmol/L
Max
Min



MON 1 Jul

Glucose mmol/L
Max
Min



- Patient reported that she always had a higher dose of insulin with her breakfast at home
- Breakfast is always 2 Weetabix, 2 cups of tea and a slice of wholemeal toast and scraping of jam (her only 'vice')
- Frustrated at not being able to adjust her own insulin or not being given the opportunity to self administer
- Sometimes her meal choices are limited if they are deemed 'too high in sugar' and her glucose levels were high
- Has capacity to manage her own diabetes, food choice and insulin dose

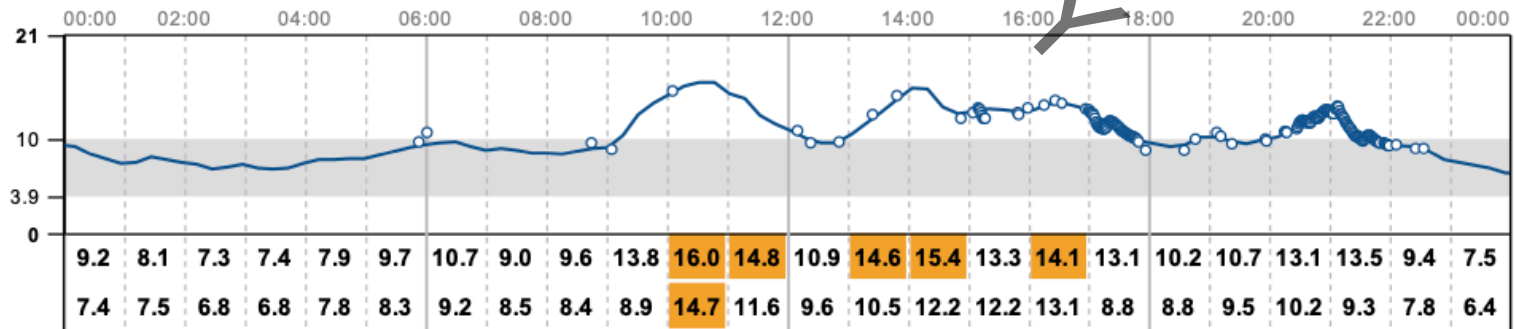
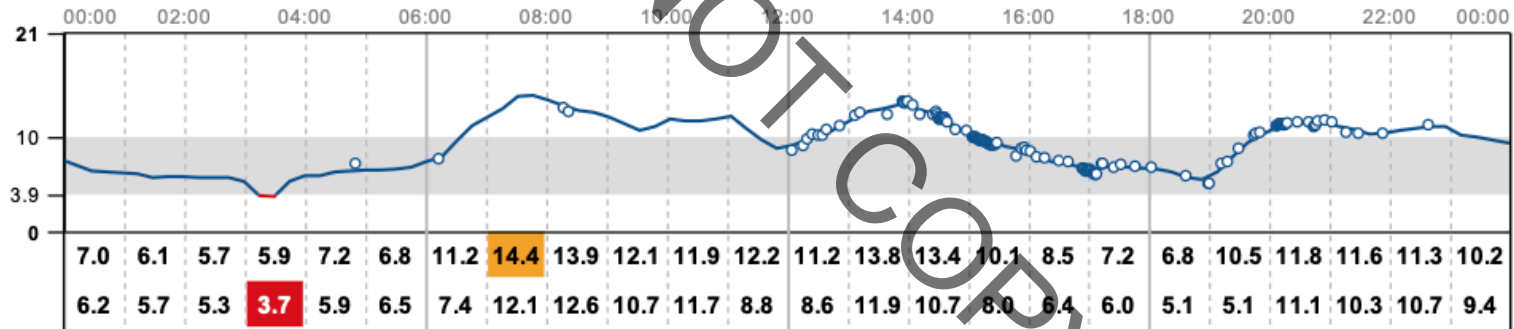
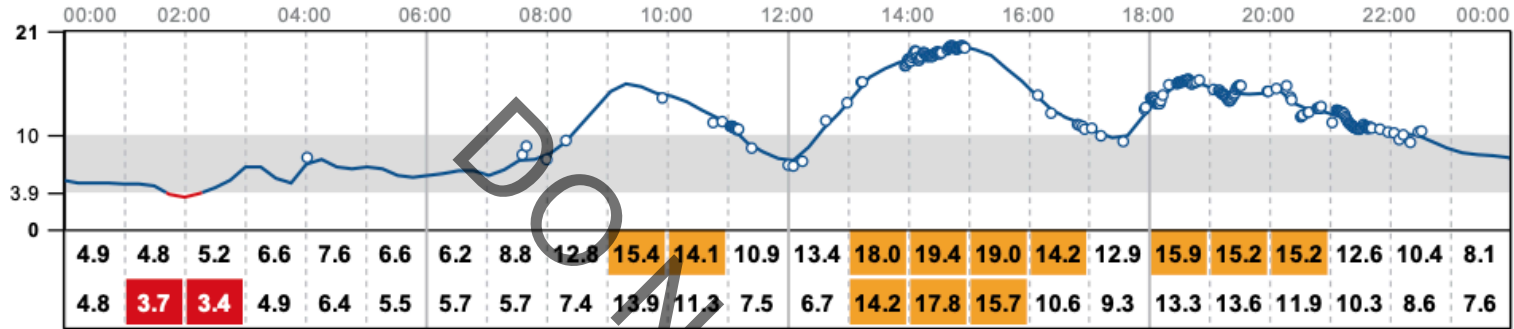
Discussion Points:

- Patients ability to self manage her diabetes has been taken away
- Limited understanding of Type 1 diabetes and importance of carbohydrate counting to match insulin requirements
- Food choices are limited
- Have a 'zero tolerance' to hypoglycaemia

Case Study 2 – 67yr new to insulin

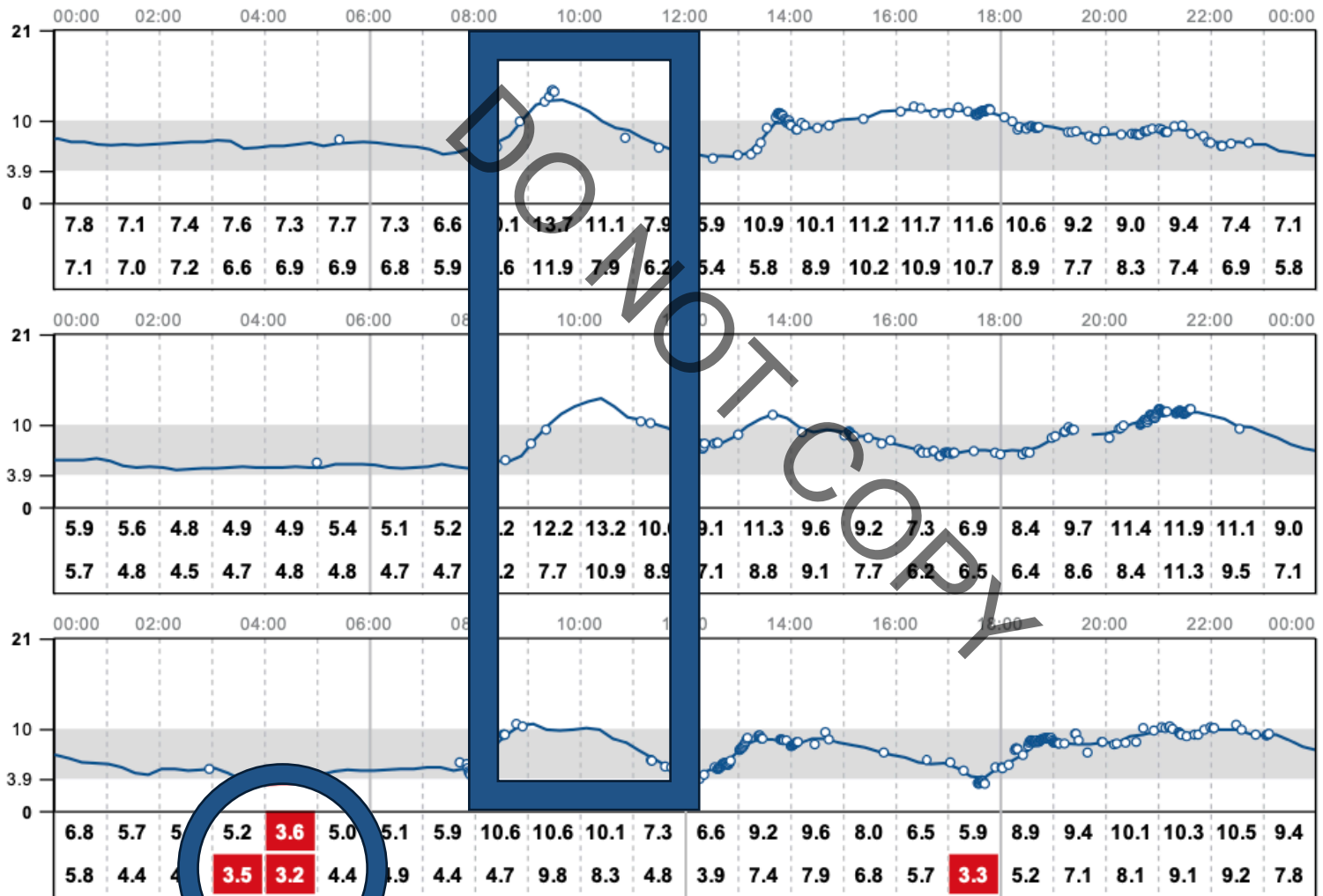
- Diagnosed Type 2 diabetes 5yrs ago
- Admitted to hospital with CCF and new diagnosis of heart failure
- HbA1c 110mmol – has been above 90mmol since diagnosis
- R1 retinopathy both eyes, M1 left eye
- Commenced on BD NovoMix 30 in hospital and also initiated FSL

- HbA1c three months later 65mmol – cautious with improving too quickly due to retinopathy
- No changes to insulin at this point
- ACR 11mmol (from 7mmol) so small dose Empaglifozin 10mg added (HbA1c previously too high)





- Reviewed 1 month later after starting Empaglifozin
- Now on FSL for 5 months
- Predicted HbA1c 55mmol
- On NovoMix 30 BD – noticing some hypos overnight but also high readings pre-bed if having a large meal in the evening.
- Retinal screening had been repeated – R1 retinopathy but no maculopathy
- Agreed to try MDI regimen to flatten profile of glucose levels – target HbA1c 53mmol



AGP Report

12 July 2024 - 25 July 2024 (14 Days)

LibreView

GLUCOSE STATISTICS AND TARGETS

12 July 2024 - 25 July 2024

14 Days

Time sensor active:

98%

Ranges And Targets For

Type 1 or Type 2 Diabetes

Glucose Ranges	Targets % of Readings (Time/Day)
Target Range 3.9-10.0 mmol/L	Greater than 70% (16h 48min)
Below 3.9 mmol/L	Less than 4% (58min)
Below 3.0 mmol/L	Less than 1% (14min)
Above 10.0 mmol/L	Less than 25% (6h)
Above 13.9 mmol/L	Less than 5% (1h 12min)
Each 5% increase in time in range (3.9-10.0 mmol/L) is clinically beneficial.	

Average Glucose

8.9 mmol/L

Glucose Management Indicator (GMI)

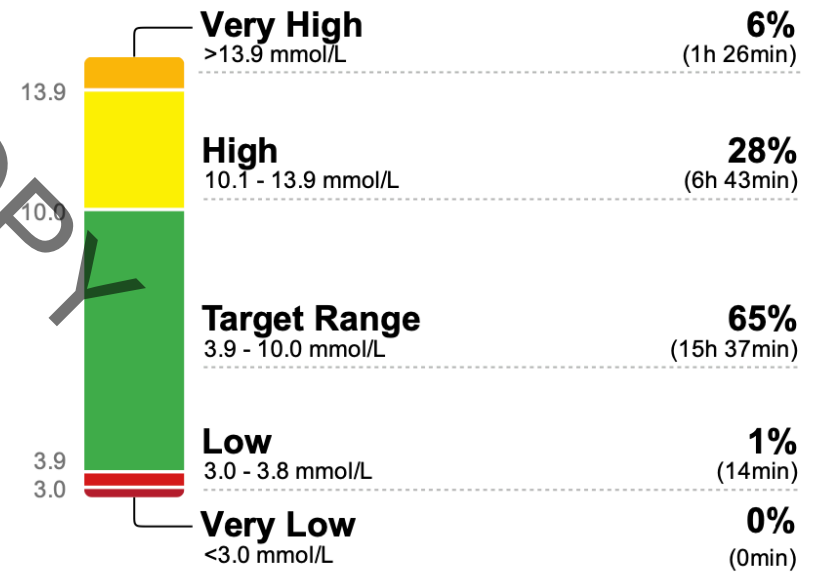
7.2% or 55 mmol/mol

Glucose Variability

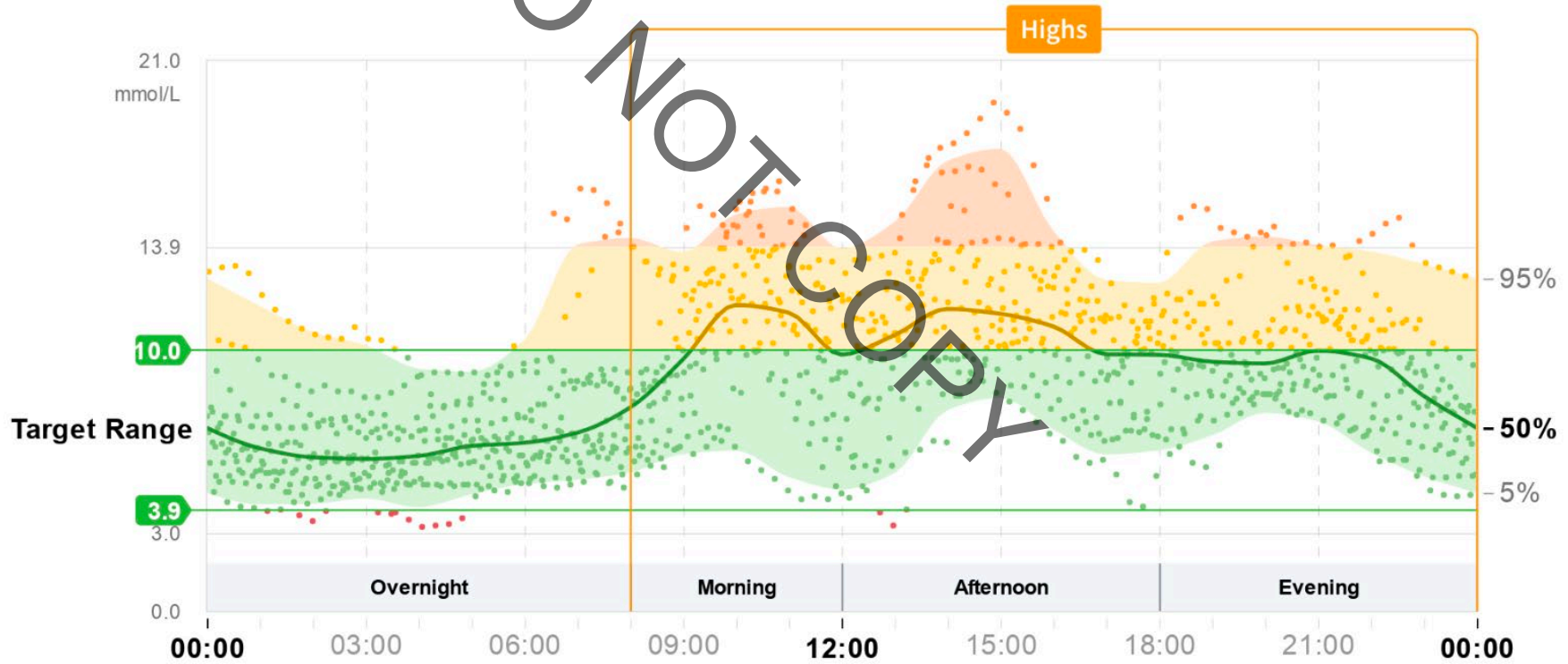
34.1%

Defined as percent coefficient of variation (%CV); target ≤36%

TIME IN RANGES



Glucose Patterns (14 Days)



Discussion points:

- FSL a key motivator in improving glycaemic control
- HbA1c improvement due to insulin initiation but also greater awareness of impact of dietary choices
- If HbA1c improved without multiple daily insulin – would you discontinue the sensor?



Diane is 55 and attends for her annual review. She is new to the practice.

Notes still being summarised.

T2dm for 8 years. Last HbA1c recalled at 52 mmol/mol.

Metformin 2g daily – Tolerates it well

Empagliflozin 10mg once daily – Drinks plenty (drinking throughout consultation) and aware of sick day rules

Other Medications: Ramipril 5mg

Adverse Incidents (medication)

Experienced GI s/e whilst on GLP-1

BMI 32 – noticed some recent weight loss

PMH

Recent ED attendance with chest pain. Informed probably angina and given GTN spray (not used). No follow up with cardiology thus far

FMH

Mixed type DM. Father died in 40's. Recalls he was on insulin
Early CVD death – 2 brothers

DONOT COPY

POCT – One Stop Diabetes Service

HCA completion of all Care Processes

Undertakes POCT for eGFR / Urine ACR and HbA1c

Other tests (lipids / lft's) dispatched to labs

POCT results provided within 10 minutes of testing

Discussion - negotiated plan of care undertaken & agreed with a registered HCP competent in diabetes care.

Access to the whole Type 2 diabetes pathway within this model. Including CGM.



Results

HbA1c – 112 mmol/mol

BP – 138/80 mmHg

Urine ACR – Normal

eGFR >60

Lipids – lab result awaited.

Considerations

- Lifestyle & Motivation
- Medication options
- Type of diabetes? Other Tests Required?
- CV risk reduction
- Overall target HbA1c?
- Next steps

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Agreed management plan

GLUCOSE MANAGEMENT

Ketones 0.4

On Empagliflozin - But high CVD Risks, so ideally requires SGLT2i

SU or Insulin?

SMBG or CGM?

CVD RISK REDUCTION

Lipid lowering therapy

Ref. Cardiology

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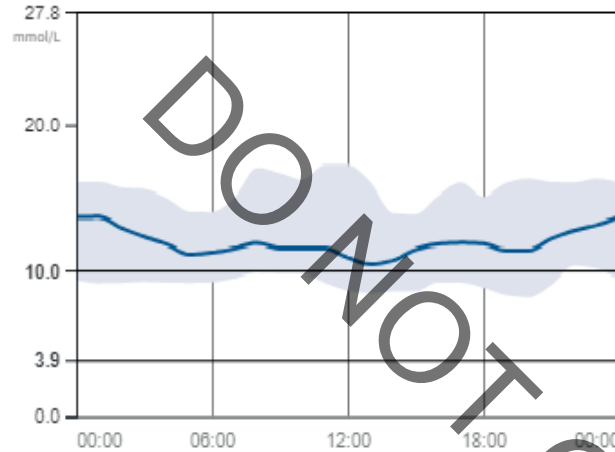
17 April 2024 – 30 April 2024

FreeStyle LibreLink

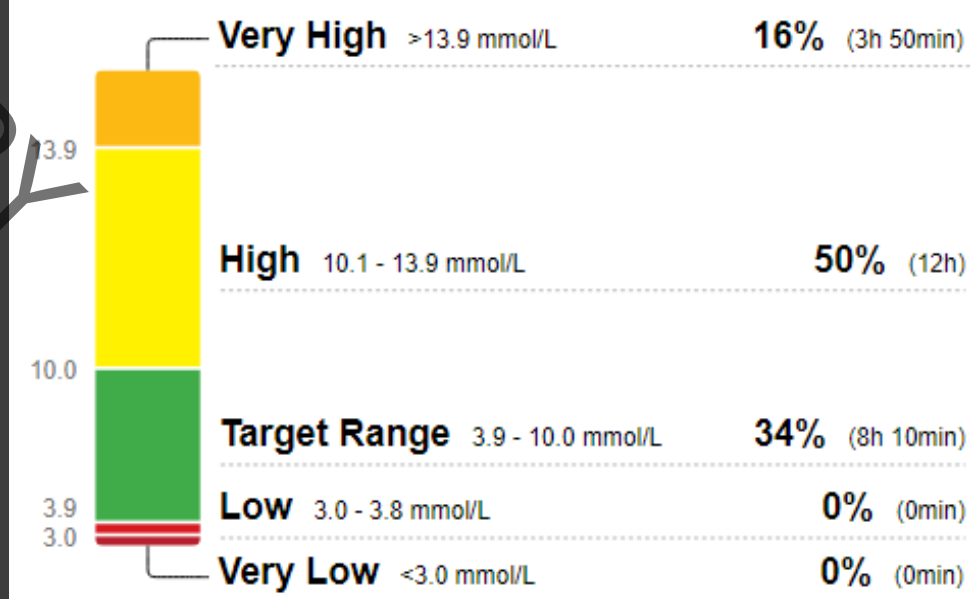
SN: BDBEA08F-23E0-4468-99F4-
D2106180E5CF

12.0 **100%** **0**

mmol/L Days of Data Hypo Events
Average Glucose



TIME IN RANGES



- SU therapy initially
- Osmolar symptoms easing
- Sufficiently improved?
- Next steps.....

3 June 2024 – 16 June 2024

FreeStyle LibreLink

SN: BDBEA08F-23E0-4468-99F4-
D2106180E5CF

9.4

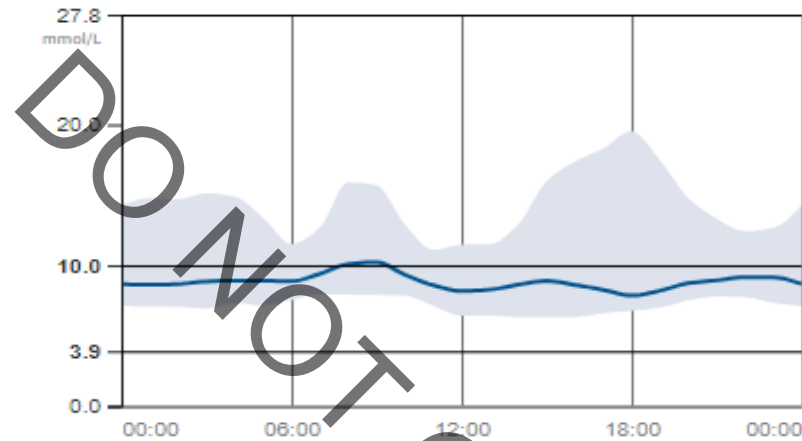
mmol/L
Average Glucose

93%

Days of Data

0

Hypo Events



Basal Insulin commenced (SU stopped) in May 2024

- SGLT2i reintroduced
- Mealtime Insulin added
- Gaining weight. Unhappy despite improved control
- Referred to dietetics carb counting and carbohydrate adjustments

PCDS

Primary Care
Diabetes Society

6 August 2024 - 19 August 2024

FreeStyle LibreLink

SN: BDBEA08F-23E0-4468-99F4-

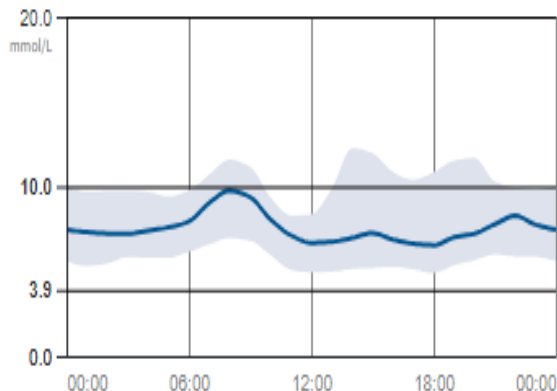
D2106180E5CF

7.6 100%

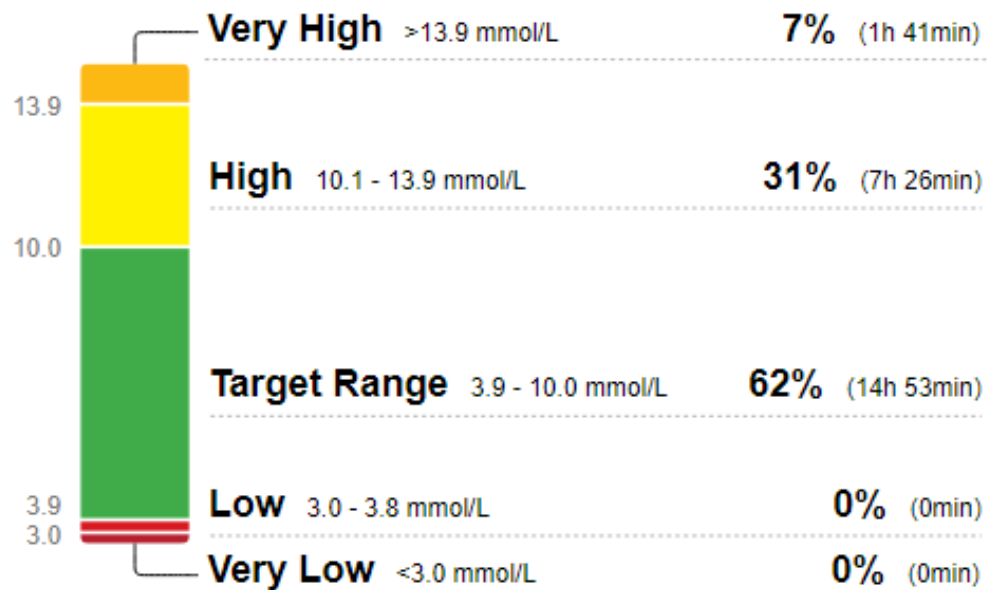
mmol/L
Average
Glucose

Days of Data

0
Hypo Events



TIME IN RANGES



AGP Report

28 July 2024 - 25 October 2024 (90 Days)

GLUCOSE STATISTICS AND TARGETS

28 July 2024 - 25 October 2024

90 Days

Time Sensor Active:

78%

Ranges And Targets For	Type 1 or Type 2 Diabetes
Glucose Ranges	Targets % of Readings (Time/Day)
Target Range 3.9-10.0 mmol/L	Greater than 70% (16h 48min)
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Above 10.0 mmol/L	Less than 25% (6h)
Above 13.9 mmol/L	Less than 5% (1h 12min)
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Average Glucose

9.5 mmol/L

Glucose Management Indicator (GMI)

7.4% or 57 mmol/mol

Glucose Variability

28.5%

Defined as percent coefficient of variation (%CV); target ≤36%



Next Steps?

Keen to come off the mealtime insulin – Once daily basal - Eligible for CGM?

Target TIR – Are we there yet?

Considerations for ongoing management

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Coming very soon!

Free e-Learning module from PCDS

Continuous glucose monitoring:

Make it simple, keep it safe

What do we need to know in primary care?

Due this month – visit <https://www.pcdsociety.org/> for updates

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Q&A

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- FreeStyle Libre Tutorials & Downloads

<https://www.freestyle.abbott/uk-en/support/tutorialsanddownloads>

- Dexcom Education & Resources

<https://uk.provider.dexcom.com/education-and-resources>

- Diabetes Technology Network (DTN-UK)

<https://abcd.care/dtn-uk/resource-taxonomy/diabetes-technology-network>



FreeStyle
Libre



Please sign up for the ABCD audit

- Examining the impact of CGM in type 2 diabetes. Primary care likely to be the biggest contributor.
- Freestyle Libre audit:
<https://abcd.care/form/application-join-abcd-nationwide-freestyle-libre-audit-and-gain-access-audit-tool-nhs-network? hsmi=2>
- Dexcom audit:
<https://abcd.care/form/application-join-abcd-nationwide-dexcom-audit-and-gain-access-audit-tool-nhs-network? hsmi=2>



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- NICE guideline (NG17). Type 1 diabetes in adults: diagnosis and management. August 2015. Updated March 2022. www.nice.org.uk/guidance/ng17
- [Overview | Type 2 diabetes in adults: management | Guidance | NICE](#)
- Kar P. Partha Kar: Don't obstruct change *BMJ* 2022; 377 :o949 doi:10.1136/bmj.o949
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- Wilmot, EG, Lumb, A, Hammond, P, et al. Time in range: A best practice guide for UK diabetes healthcare professionals in the context of the COVID-19 global pandemic. *Diabet. Med.* 2021; 38:e14433. <https://doi.org/10.1111/dme.14433>
- Edinburgh: Tyndall et al (2019) - Marked improvement in HbA 1c following commencement of flash glucose monitoring in people with type1 diabetes <https://pubmed.ncbi.nlm.nih.gov/31177314/>