VIRTUAL MEDICINE A CLINIC DAY WITH DR KADER 2020

Relationships with commercial interests:
Grants/Research support NOVONORDISK; SANOFI;
Speaker’s bureau/honoraria:DEXCOM; ANIMAS; MEDTRONIC; ELI LILLY NOVORDISK; BI ; SANOFI; ABBOTT;MERCK; ASTRAZENECA
Consulting/Advisory Board:SAME AS ABOVE
Other/Patents

HOW MANY PATIENTS A WEEK DO YOU SEE TYPE 1 DIABETES OR TYPE 2 DIABETES

- A) 0 TO 5
- B) 5 TO 10
- C) 10 TO 15
- D) OVER 15

IS VIRTUAL MEDICINE HERE TO STAY

A) YES
B) NO

TOOLS FOR VIRTUAL MEDICINE

- DO YOU USE PLATFORMS FOR YOUR DIABETES PATIENT; SO YOU CAN SEE THEIR DATA
- A) YES
- B) NO

HAVE YOU HEARD OF

- DEXCOM CLARITY
- A) YES
- B) NO
- LIBREVIEW
- A) YES
- B) NO

WOULD YOU BE INTERESTED IN LEARNING MORE ABOUT THESE PLATFORMS

- A) YES
- B) NO TAKES TOO MUCH TIME
- C) TEACH ME ABOUT IT AND MAYBE WOULD INCORPORATE IT

TECHNOLOGY AND DIABETES

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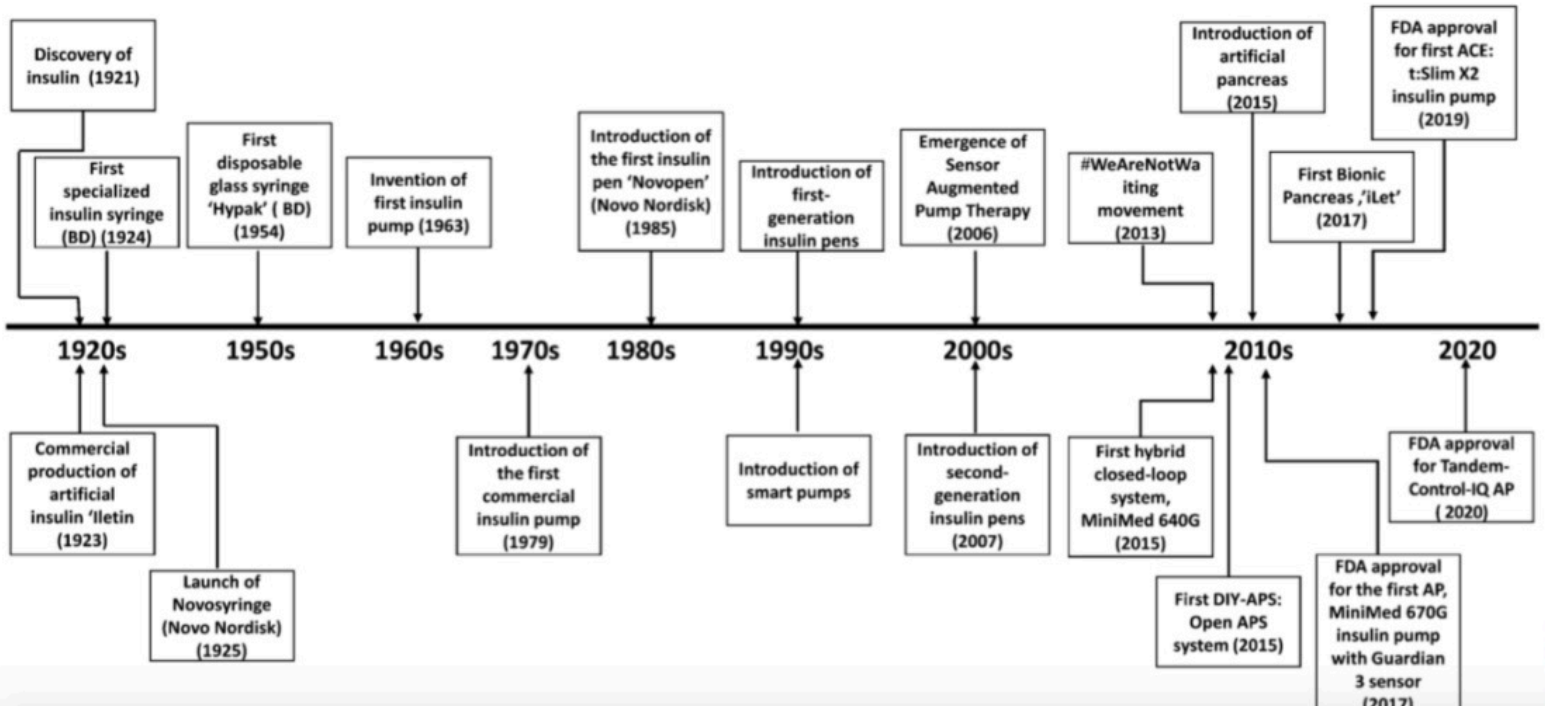
Diabetes Technology Timeline



The FreeStyle Libre system and LibreView support telemedicine, enabling HCPs to effectively monitor multiple people with diabetes under their care

For people with diabetes, the FreeStyle Libre system:

- Is convenient, easy to use and removes the need for routine finger-prick* testing
- Helps understand impact of medication, food, and activity on their glucose patterns
- Empowers self management of glucose patterns

*Finger pricks are required if glucose readings do not match symptoms or expectations

For clinicians, LibreView is a user-friendly dashboard that:

- Provides access to standardised reports containing comprehensive glucose information needed inform disease management
- Allows real-time analysis of data from multiple people with diabetes under their care
- Provides a platform for care team collaboration

Sensor-based glucose monitoring using the FreeStyle Libre system offers a complete glycemic picture to help patients and clinicians make more informed diabetes management decisions, across both primary and secondary care[1,2]

HCP = healthcare professional

1. Kudva YC et al. 2018. "Approach to Using Trend Arrows in the FreeStyle Libre Flash Glucose Monitoring Systems in Adults." *Journal of the Endocrine Society* 2 (12): 1320–37. https://doi.org/10.1210/js.2018-00294; 2. Unger J et al. 2020. "Practical guidance for using the FreeStyle Libre flash continuous glucose monitoring in primary care." Postgraduate Medicine, 1–9. Advance online publication. https://doi.org/10.1080/00325481.2020.1744393

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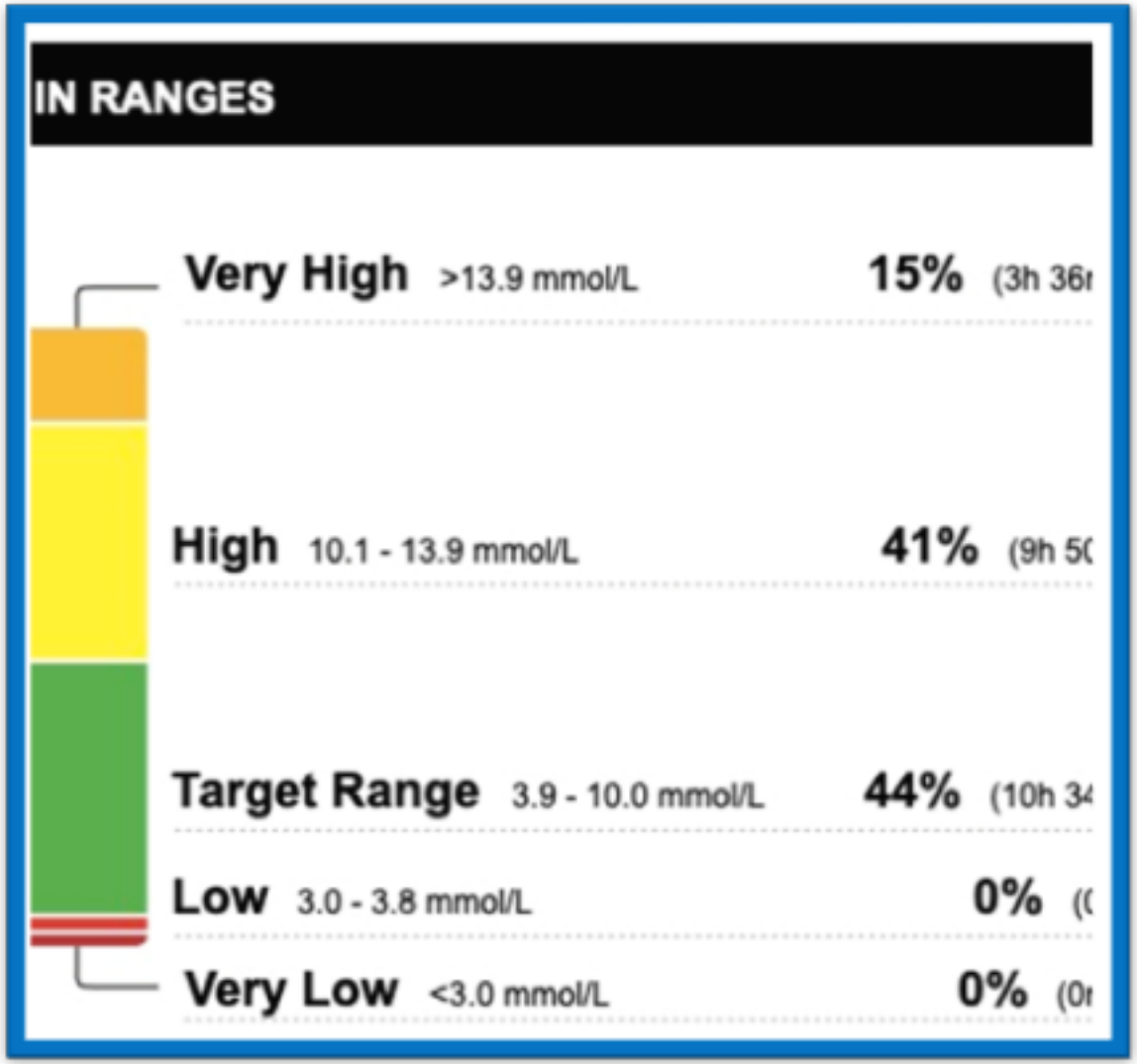
CHALLENGES OF MANAGEMENT DIABETES

- EXPECTATIONS for patients
- UNDERSTANDING FLASH MONITORING VERSUS FINGERSTICK
- UNDERSTANDING THAT NO 2 DAYS ARE THE SAME AND THAT SUGARS LIKE LIFE CHANGES FROM DAY TO DAY
- FRUSTRATIONS ON BOTH MD AND PATIENT SIDE
- MY MOTO; MY PATIENTS LIVE THE LIFE AND THE DOCTORS GETS TO SEE MANY DIFFERENT EXAMPLES; WE WORK TOGETHER AS A TEAM

Dr Kader's clinical experience on telemedicine

Dr Kader's perspective

- TELEMEDICINE:
- Since march 2020
- is our new reality
- Libre view has been a game changer AND
- DEXCOM FOR TYPE 1 AND SOME TYPE 2
- Our patients can upload from home environment and can connect with us at any time
- At appointment we go over time in range



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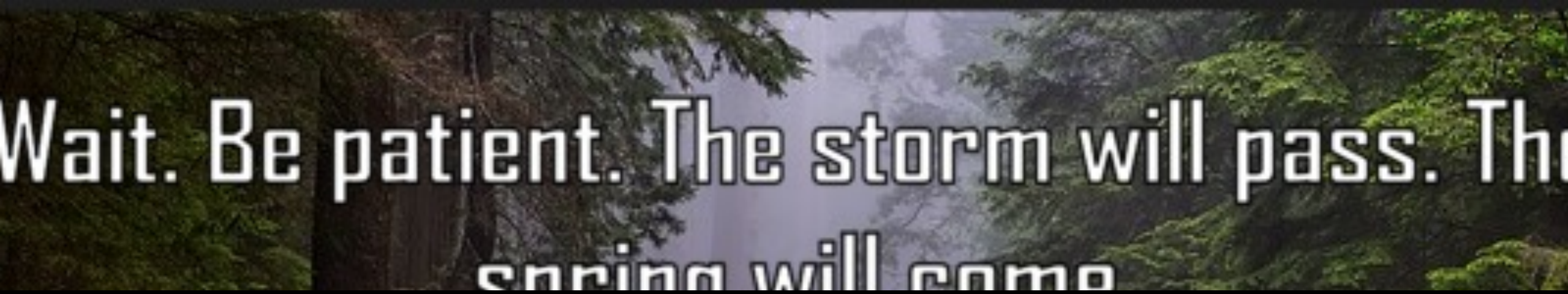

Patient education

What impacts glucose levels

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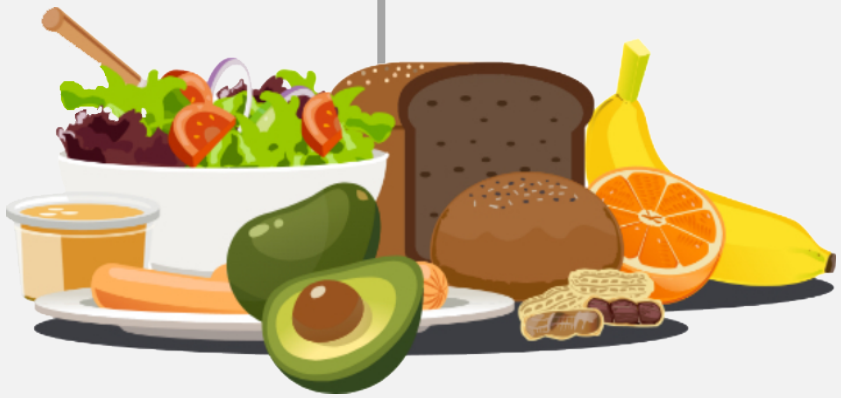
How does food change your glucose?

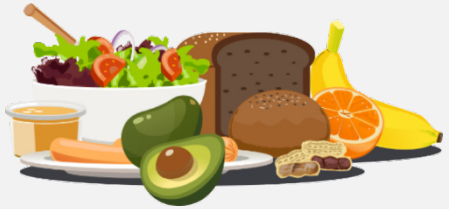


Carbohydrates have the **biggest** impact on your readings

Follow a healthy eating plan

What changes your glucose readings?

Food



Activities

Medication

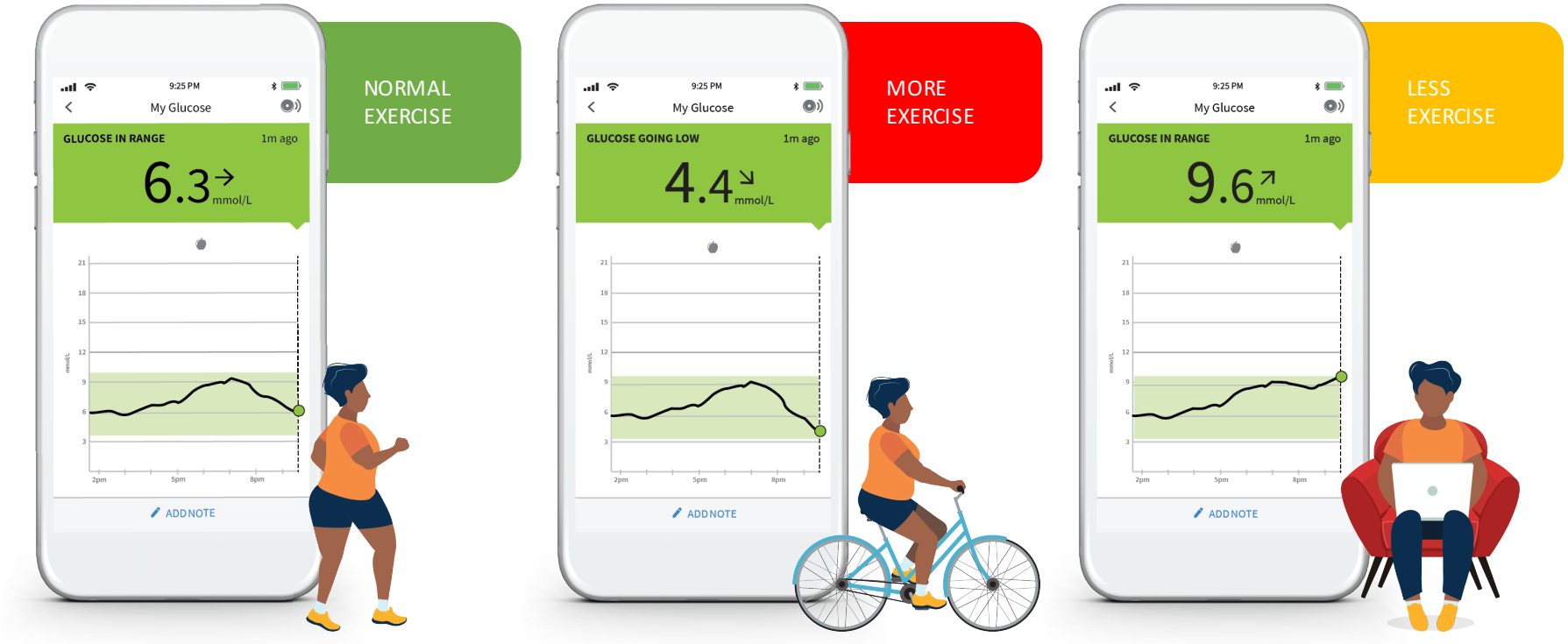
Illness

Stress

Alcohol

Let’s take a look at how different breakfast foods can change your glucose

Exercise can change your glucose too!



Taking your medication as prescribed can change your glucose

BE AWARE OF CHANGING GUIDELINES

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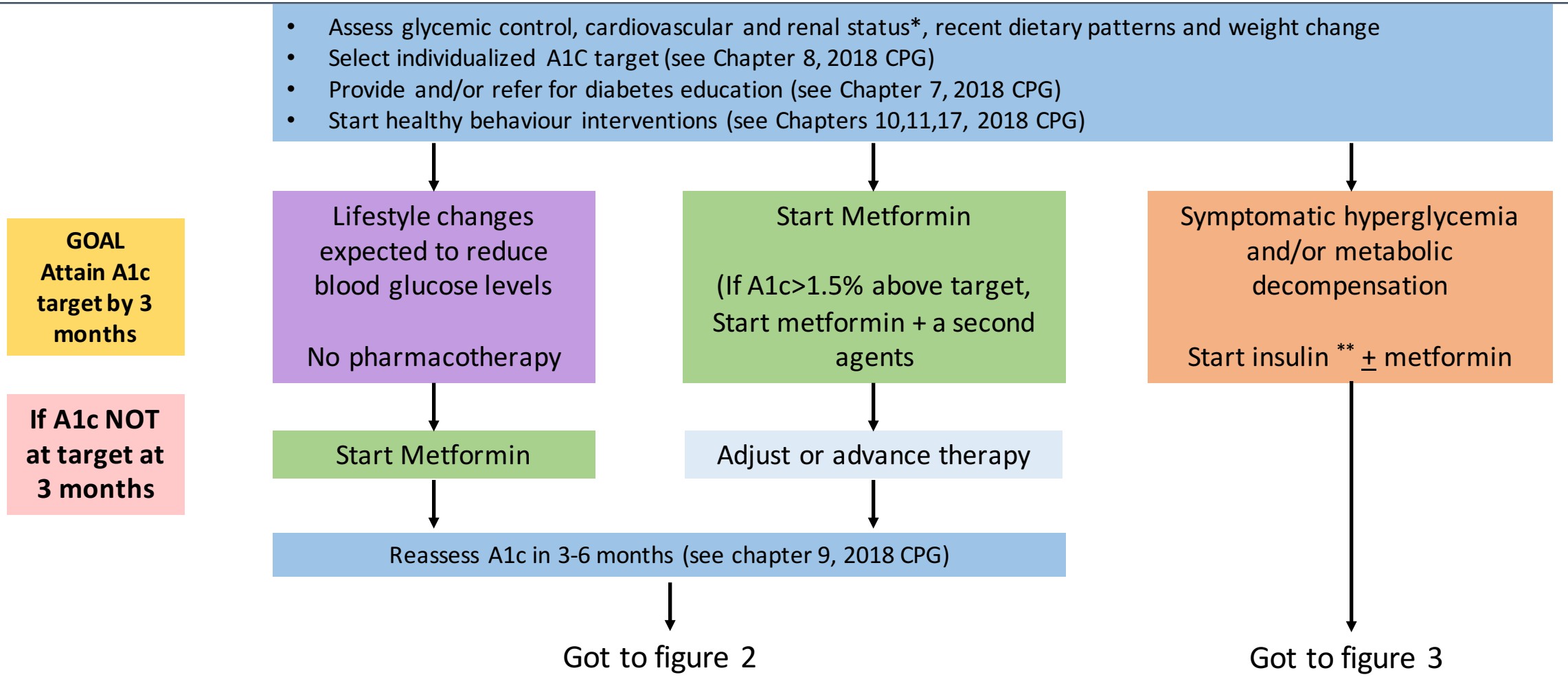
Figure 1: At diagnosis of type 2 diabetes



In individuals **with** atherosclerotic cardiovascular disease, history of heart failure (with reduced ejection fraction) or chronic kidney disease, agents with cardiorenal benefits (Figures 2A and 2B) may be considered (see Pharmacologic Glycemic Management of Type 2 Diabetes in Adults: 2020 Update - The User's Guide).

* Unintentional weight loss should prompt consideration of other diagnoses (e.g. type 1 diabetes or pancreatic disease).

** Reassess need for ongoing insulin therapy once type of diabetes is established and response to health behavior interventions is assessed

A 1 C, glycated hemoglobin; *CPG,* clinical practice guidelines

Lipscombe et al. Can J Diabetes 44 (2020) 575-591
Senior et al., Can J Diabetes. 2020 Oct;44(7):592-596.

Figure 2A. Reviewing, adjusting or advancing therapy in type 2 diabetes.

Regular Review
- Assess glycemic control, cardiovascular and renal status
- Screen for complications (eyes, feet, kidneys)
- Review efficacy, side effects, safety and ability to take current medications
- Reinforce and support healthy behaviour interventions

If A1c NOT at target at 3 months
And/or
Change in clinical status

Adjust or advance therapy*

ASCVD, CKD or HF OR Age >60 with 2 CV risk factors+

ADD or SUBSTITUTE AHA with demonstrated cardiorenal benefits (See Figure 2B)

		Established Cardiovascular or Renal Disease			Risk Factors
		ASCVD	CKD	HF	>60 yrs with CV risk factors+
Lower risks observed in clinical trials	MACE	**GLP1-RA or SGLT2i***	SGLT2i* or GLP1RA		**GLP1-RA**
	HHF	SGLT2i*	**SGLT2i***	**SGLT2i*** (and lower CV mortality)	SGLT2i*
	Progression of nephropathy	SGLT2i*	**SGLT2i***		*SGLT2i**

Highest levels of evidence — Grade A | Grabe B | *Grade C or D*

*Initiate only if eGFR>30 ml/min/1 .73m2

A1C above target and glucose lowering required

ADD or SUBSTITUTE AHA++ according to clinical priorities+++
start insulin for symptomatic hyperglycemia and/or metabolic decompensation (Figure 3)

PROVEN cardiorenal benefit in high risk populations**	CV safety, but **NO** proven cardiorenal benefit**	**RISK** of HF
GLP1RA dulaglutide, liraglutide, semaglutide **SGLT2i** canagliflozin, dapagliflozin, empagliflozin	GLP1RA exenatide ER, lixisenatide ertugliflozin*** (SGLT2i)	

Weight loss

DPP4i
sitagliptin, linagliptin, alogliptin
saxagliptin (DPP4i)

Acarbose

Hypoglycemia
Sulfonylureas
Meglitinides
Insulin

Thiazolidinediones
Weight gain

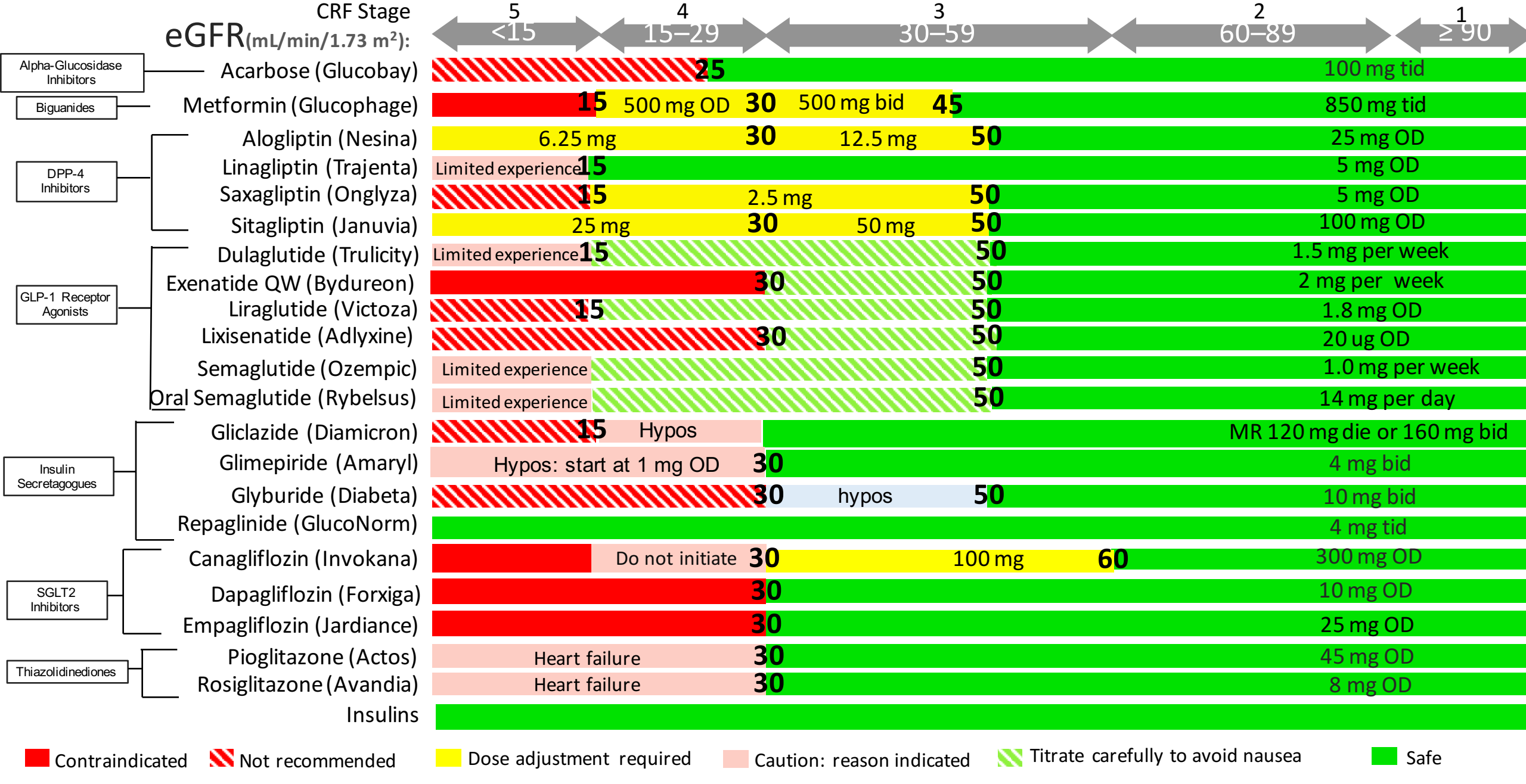
Fixed-dose combinations may be considered to reduce burden

*Changes in clinical status may necessitate adjustment of glycemic targets and/or deprescribing; +Tobacco use; dyslipidemia (use of lipid-modifying therapy or a documented untreated low-density lipoprotein (LDL) ≥3.4 mmol/L, or high-density lipoprotein-cholesterol (HDL-C) <1.0 mmol/L for men and <1.3 mmol/L for women, or triglycerides ≥2.3 mmol/L); or hypertension (use of blood pressure drug or untreated systolic blood pressure [SBP] ≥140 mmHg or diastolic blood pressure [DBP] ≥95 mm Hg); ++ All antihyperglycemic agents (AHAs) have Grade A evidence for effectiveness to reduce blood glucose levels; +++ Consider degree of hyperglycemia, costs and coverage, renal function, comorbidity, side effect profile and potential for pregnancy; ** In CV outcome trials performed in people with atherosclerotic cardiovascular disease (ASCVD), chronic kidney disease (CKD), heart failure (HF) or at high cardiovascular (CV) risk; ***VERTIS (CV outcome trial for ertugliflozin) presented at American Diabetes Association (ADA) June 2020 showed non inferiority for major adverse CV events (MACE). Manuscript not published at time of writing. A 1C, glycated hemoglobin; DPP4i, dipeptidyl peptidase-4 inhibitors; eGFR, estimated glomerular filtration rate; GLP1-RA, glucagon-like peptide-1 receptor agonists; exenatide ER, exenatide extended-release; HHF, hospitalization for heart failure; SGLT2i, sodium-glucose cotransporter 2 inhibitors; yrs, years.

Lipscombe et al. Can J Diabetes 44 (2020) 575-591

Yale JF, version October2020
www.dryale.ca

Antihyperglycemic Agents and Renal Failure



The dose indicated is the highest dose that can be used at that eGFR

Dr Kader's perspective on improvement of HbA1c

- Mr G
- Poor control for years
- On basal TRESIBA and oral agents
- METFORMIN; DIAMICRON; JARDIANCE
- Disinterested in diabetes
- A1c over 11 percent*

* The case study provided is not intended to be used for medical diagnosis or treatment or as a substitute for professional medical advice. Individual symptoms, situations and circumstances may vary.

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LABS

- A1C 11 PERCENT
- GFR 50
- MICROALBUMIN /CREATININE 30 (NORMAL 2)
- LDL 1.8
- ON ACE;STATIN; CALCIUM CHANNEL BLOCKER

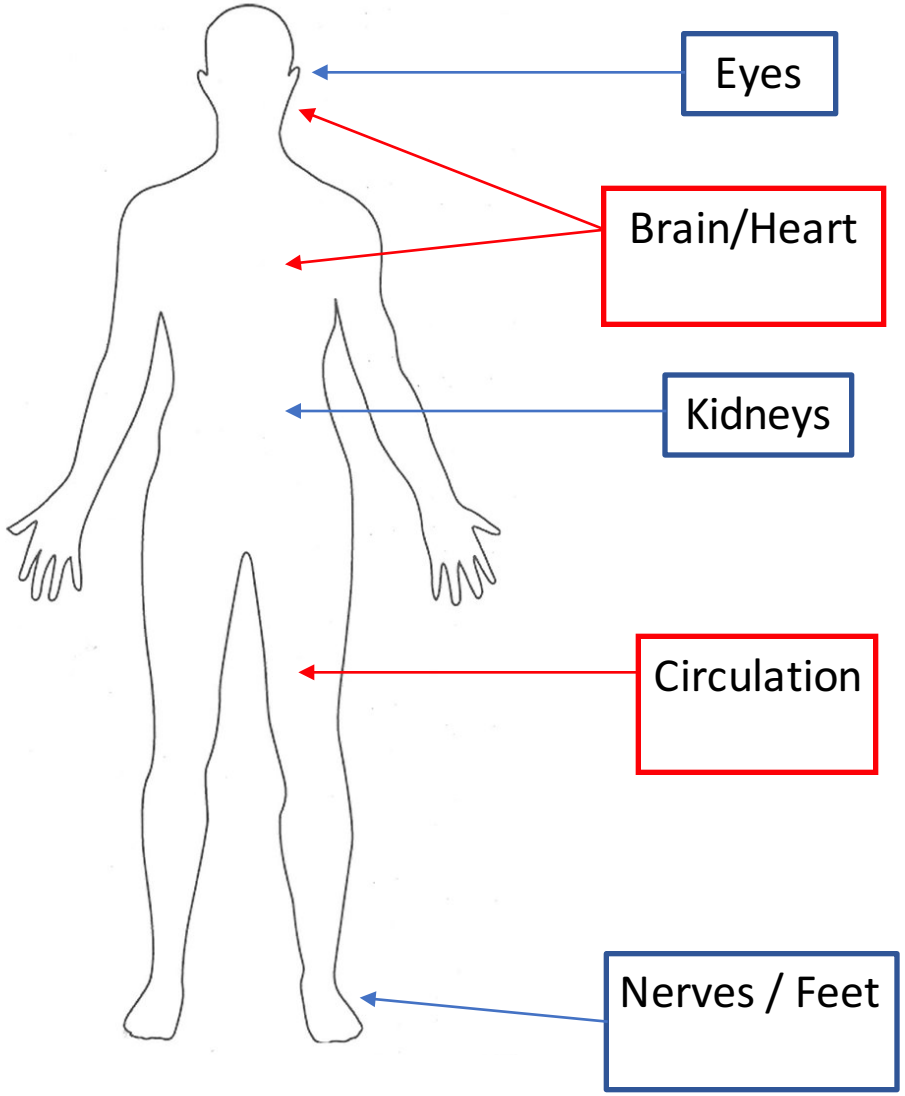
2018

ABCDES^3 of Diabetes Care

- ✓ A • A1C – optimal glycemic control (usually ≤7%)
- ✓ B • BP – optimal blood pressure control (<130/80)
- ✓ C • Cholesterol – LDL <2.0 mmol/L or >50% reduction
- ✓ D • Drugs to protect the heart

  A – ACEi or ARB | S – Statin | A – ASA if indicated | SGLT2i/GLP-1 RA with demonstrated CV benefit if type 2 DM with CVD and A1C not at target
- ✓ E • Exercise / Healthy Eating
- ✓ S • Screening for complications
- ✓ S • Smoking cessation
- ✓ S • Self-management, stress and other barriers

Screening for complications



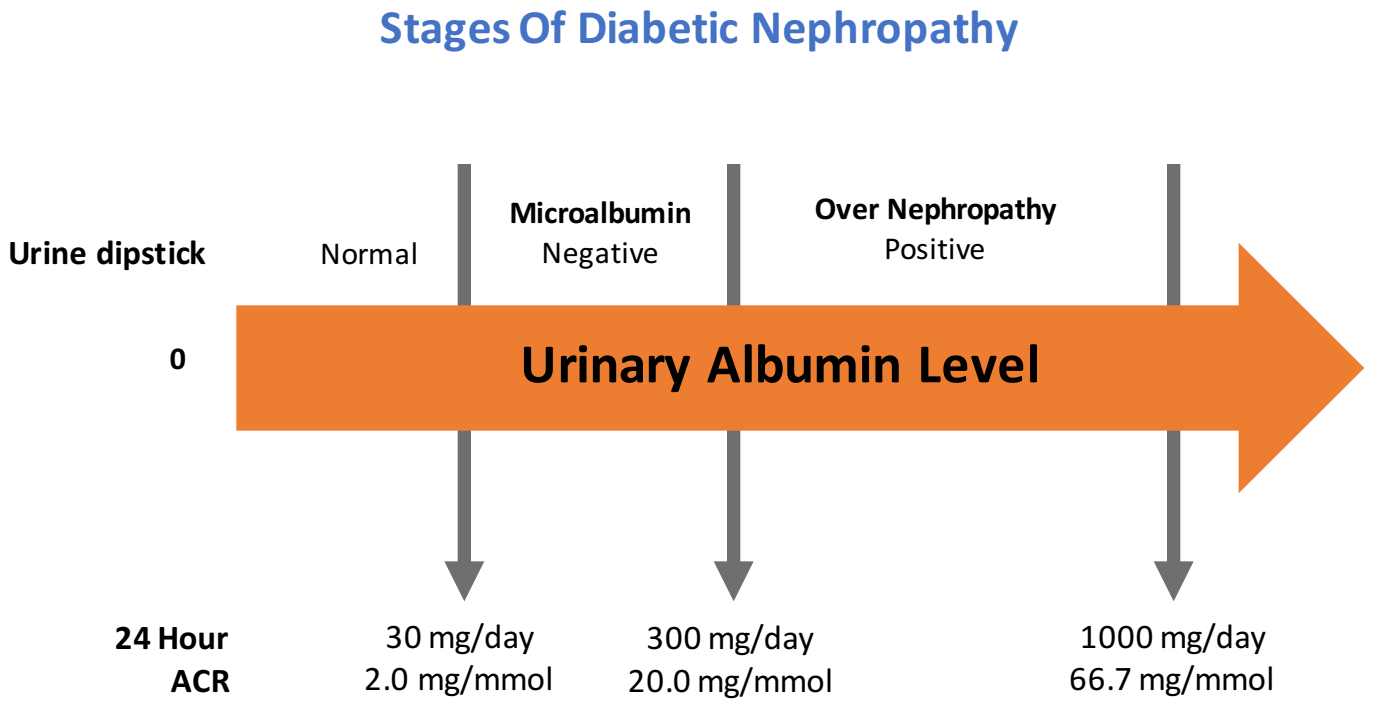
Chronic Kidney Disease (CKD) in Diabetes: Thresholds and Classifications

Thresholds for CKD in Diabetes

ACR ≥2.0 mg/mmol

and/or

eGFR <60 mL/min



Note: change in definition of microalbuminuria
ACR ≥2.0 mg/mmol

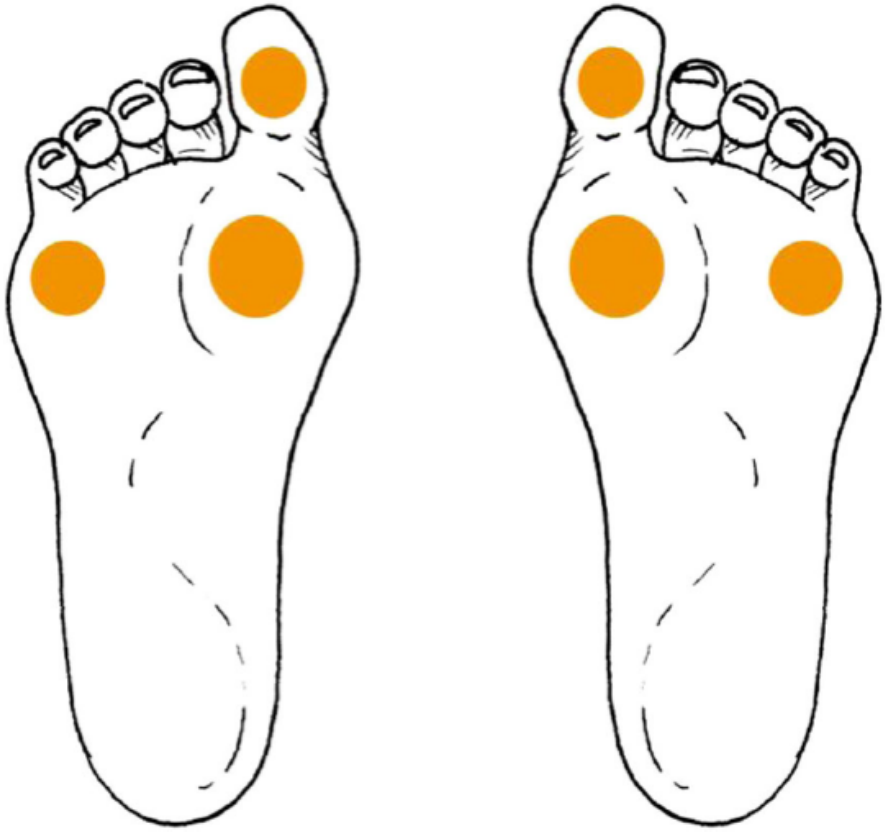
ACR: albumin creatinine ratio

Adapted from Diabetes Canada Clinical Practice Guidelines Expert Committee. *Can J Diabetes* 2018; 42(Suppl1):S1-S325.

Foot Care Checklist

- ✓ EDUCATE about proper foot care
- ✓ EXAMINE for structural, vascular, neuropathy problems at diagnosis then annually
- ✓ DO a 10 gram monofilament assessment
- ✓ IDENTIFY those at high risk of foot ulcers and educate, assess more frequently, consider footwear
- ✓ REFER persons with foot ulcers and other complications to those specialized in foot care

Screening for Protective Sensation Using The 10 gram Monofilament



How to perform the sensory examination:

- Conduct in a quiet and relaxed setting.
- Begin by applying the monofilament to the hands, elbow or forehead so that patient what to expect.
- Ensure that the patient can not see whether or where the monofilament is being applied.
- Test the three sites on both feet shown in the figure.

Modified from: Schaper NC, Van Netten JJ, Apelqvist J, Lipsky BA, Bakker K; International Working Group on the Diabetic Foot. Prevention and management of foot problems in diabetes: A Summary Guidance for Daily Practice 2015, based on IWGDF Guidance Documents. Diabetes Metab Res Rev 2016;32 Suppl 1:7-15

Screening for Retinopathy

When to initiate screening

- Type 1 diabetes: 5 years after diagnosis in all individuals ≥15 years
- Type 2 diabetes: children, adolescents and adults at diagnosis

Screening methods

- 7-standard field, stereoscopic-colour fundus photography with interpretation by a trained reader (gold standard)
- Direct ophthalmoscopy or indirect slit-lamp fundoscopy through dilated pupil
- Digital fundus photography

Retinopathy (cont'd)

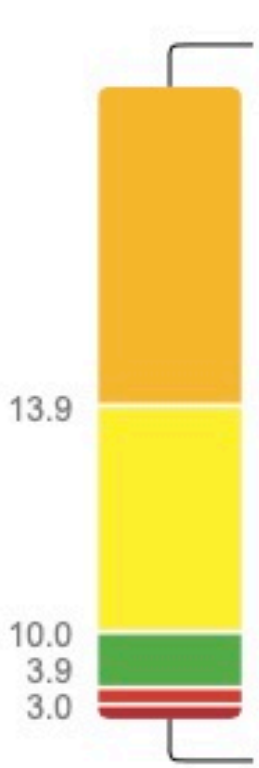
If retinopathy is present

- Diagnose retinopathy severity and establish appropriate monitoring intervals (1 year or less)
- Treat sight-threatening retinopathy with laser, pharmacological or surgical therapy
- Review glycemic, BP and lipid control, and adjust therapy to reach targets as per guidelines*
- Screen for other diabetes complications

If retinopathy is not present

- Type 1 diabetes: rescreen annually
- Type 2 diabetes: rescreen every 1 to 2 years
- Review glycemic, BP and lipid control, and adjust therapy to reach targets as per guidelines*
- Screen for other diabetes complications

TIME IN RANGES



Very High >13.9 mmol/L **55%** (13h 12min)

High 10.1 - 13.9 mmol/L **38%** (9h 7min)

Target Range 3.9 - 10.0 mmol/L **7%** (1h 41min)

Low 3.0 - 3.8 mmol/L **0%** (0min)

Very Low <3.0 mmol/L **0%** (0min)

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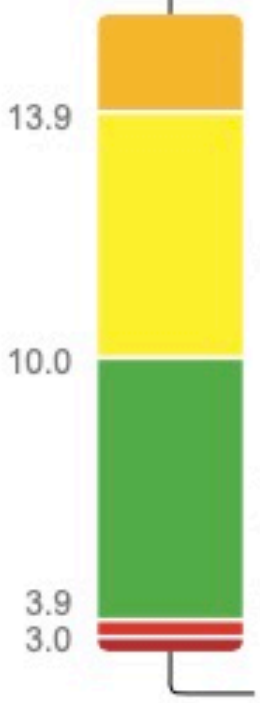
TIME IN RANGES



Very High >13.9 mmol/L **15%** (3h 36min)

High 10.1 - 13.9 mmol/L **41%** (9h 50min)

Target Range 3.9 - 10.0 mmol/L **44%** (10h 34min)

Low 3.0 - 3.8 mmol/L **0%** (0min)

Very Low <3.0 mmol/L **0%** (0min)

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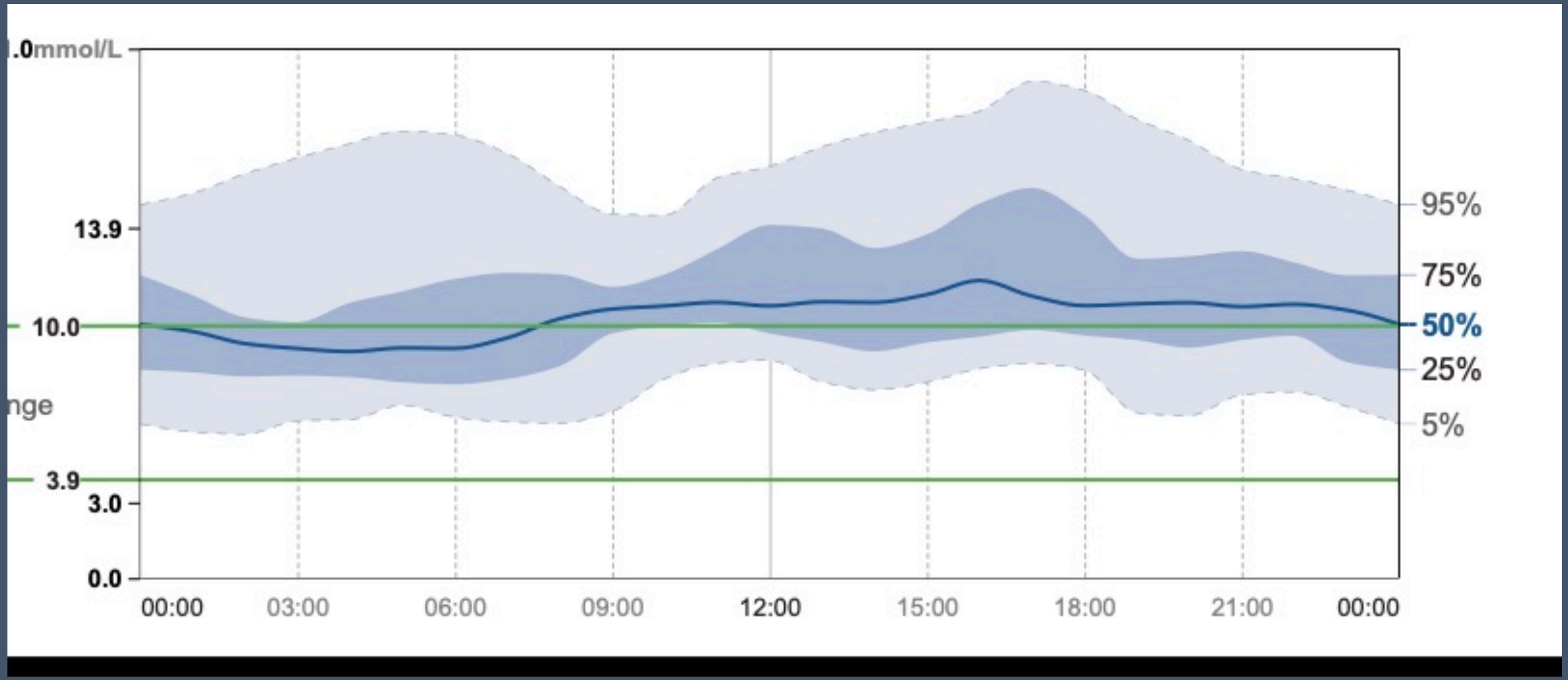

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Counsel all Patients About

Sick Day Medication List

Visit guidelines.diabetes.ca for patient handout

Instructions for Healthcare Professionals:
If patients become ill and are unable to maintain adequate fluid intake, or have an acute decline in renal function (e.g. due to gastrointestinal upset or dehydration), they should be instructed to hold medications which will:

A) Increase risk for a decline in kidney function:
- Angiotensin-converting enzyme inhibitor
- Angiotensin receptor blockers
- Direct renin inhibitors
- Non-steroidal anti-inflammatory drugs
- Diuretics
- SGLT2 inhibitors

B) Have reduced clearance and increase risk for adverse effects:
- Metformin
- Sulfonylureas (gliclazide, glimepiride, glyburide)

S sulfonylureas
A ACE-inhibitors
D diuretics, direct renin inhibitors

M metformin
A angiotensin receptor blockers
N non-steroidal anti-inflammatory
S SGLT2 inhibitors

Please complete the following card and give it to your patient.

Patients should be instructed that increased frequency of self blood glucose monitoring will be required and adjustments to their doses of insulin or oral antihyperglycemic agents may be necessary.

Instructions for Patients
When you are ill, particularly if you become dehydrated (e.g. vomiting or diarrhea), some medicines could cause your kidney function to worsen or result in side effects.

If you become sick and are unable to drink enough fluid to keep hydrated, you should **STOP** the following medications:

- Blood pressure pills
- Water pills
- Metformin
- Diabetes pills
- Pain medications
- Non-steroidal anti-inflammatory drugs (see below)

_____

_____

_____

_____

_____

Please be careful not to take non-steroidal anti-inflammatory drugs (which are commonly found in pain medications (e.g. Advil) and cold remedies).

Please check with your pharmacist before using over-the-counter medications and discuss all changes in medication with your healthcare professional.

Please increase the number of times you check your blood glucose levels. If they run too high or too low, contact your healthcare professional.

If you have any problems, you can call:

_____

HT

- TYPE 2 DIABETES LONGSTANDING
- HYPOFEAR
- A1C 11 PERCENT ON MDI
- CHRONIC FOOT INFECTIONS
- STARTED ON VICTOZA
- WANTED ABSOLUTELY TO PREVENT LOWS

clarity.dexcom.eu/#/data/daily

Family View - Ancestry.ca | Endocrinolog...orth America | SSL-VPN Portal | RDP: physicians.lmc.ca | Terrabella Montreal | Le blog des ...ée 2017-2018 | Live From ADA 2017 | 2017 McGill F...ourse - Users | Car Locksmith...on, Car Keys

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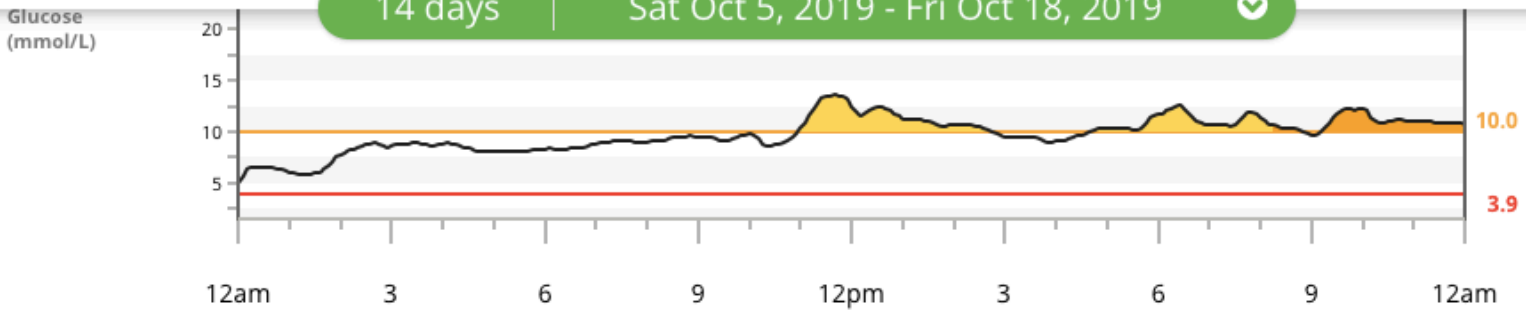
CONTINUOUS GLUCOSE MONITORING

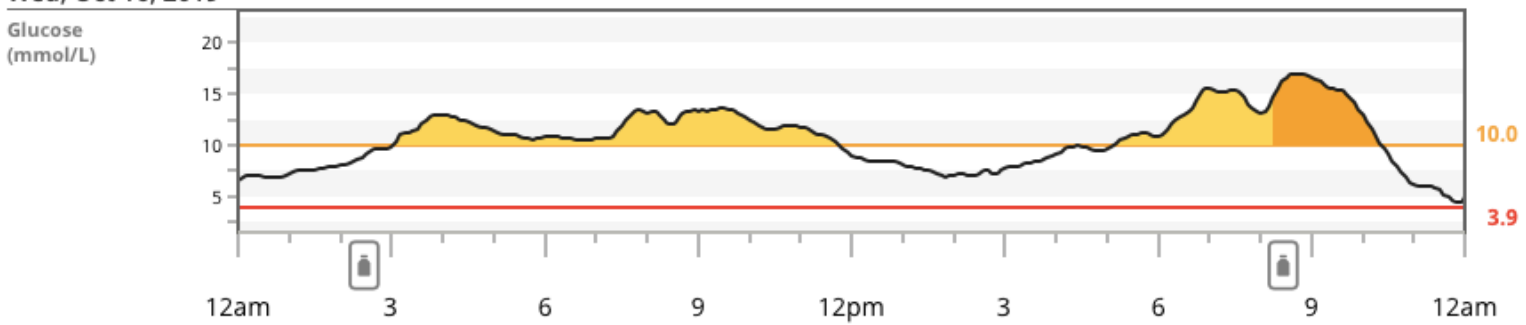
Overview | Patterns | Data | Compare | Statistics | AGP | Settings

14 days | Sat Oct 5, 2019 - Fri Oct 18, 2019



9:56 AM Signal Loss	**3:51 PM** Signal Loss	**6:46 PM** Signal Loss	**10:36 PM** Signal Loss

Wed, Oct 16, 2019



2:49 AM Fast-Acting	**3:46 PM** Signal Loss	**4:51 PM** Signal Loss	**8:42 PM** Fast-Acting	**11:50 PM** Low

clarity.dexcom.eu

All-new Echo (3rd Gen) - Smart speaker with Alexa - Sandstone: Amazon.ca: Amazon Devices | Dexcom CLARITY

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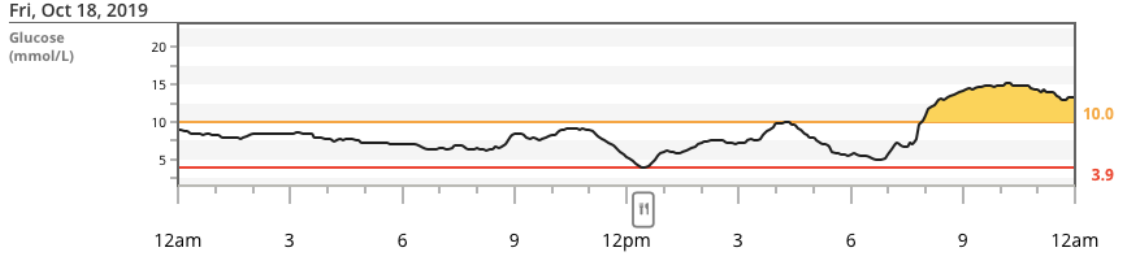
Overview | Patterns | Data | Compare | Statistics | AGP | Settings

14 days | Mon Oct 7, 2019 - Sun Oct 20, 2019

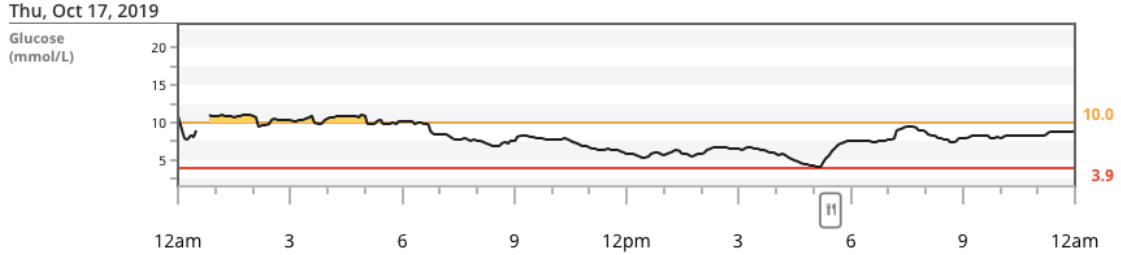
1:1

Fri, Oct 18, 2019



12:18 PM

Thu, Oct 17, 2019



5:05 PM

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Dexcom CONTINUOUS GLUCOSE MONITORING

Overview | Patterns | Data | Compare | Statistics | AGP | Settings

14 days | Sat Oct 5, 2019 - Fri Oct 18, 2019

Glucose Statistics

Avg Glucose mmol/L	Estimated HbA1c
10.2	8.1%

Glucose Exposure

Very Low	Low	In Target Range	High	Very High
< 3.0 mmol/L	< 3.9 mmol/L	3.9 - 10.0 mmol/L	> 10.0 mmol/L	> 13.9 mmol/L
0.5%	1.1%	54.8%	44.1%	12.9%

Glucose Ranges

Coefficient of Variation	SD mmol/L
35.4%	3.6

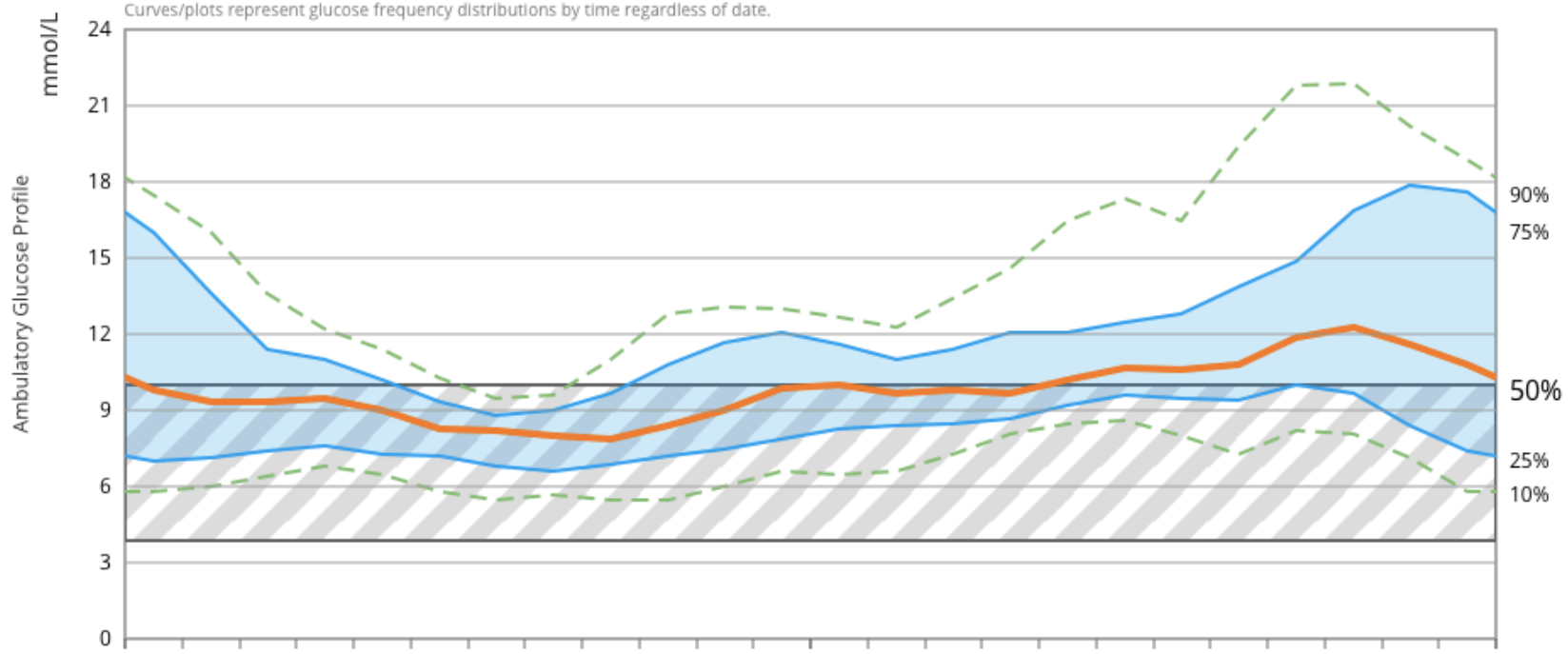
Glucose Variability

% Time CGM Active
95.9%

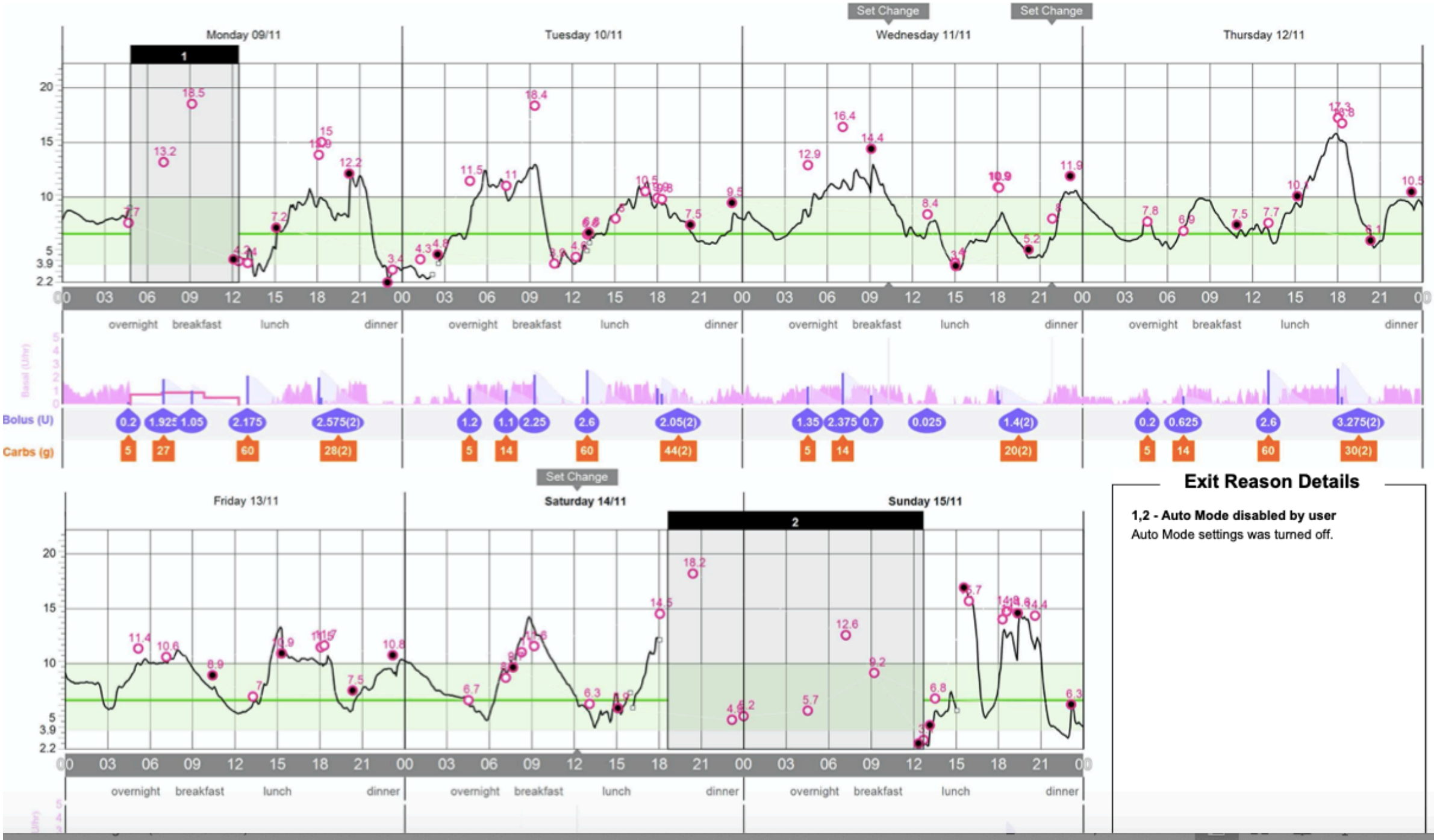
Data Sufficiency

CGM | 50% - Median | 25/75% - IQR | 10/90% | Target Range

Curves/plots represent glucose frequency distributions by time regardless of date.



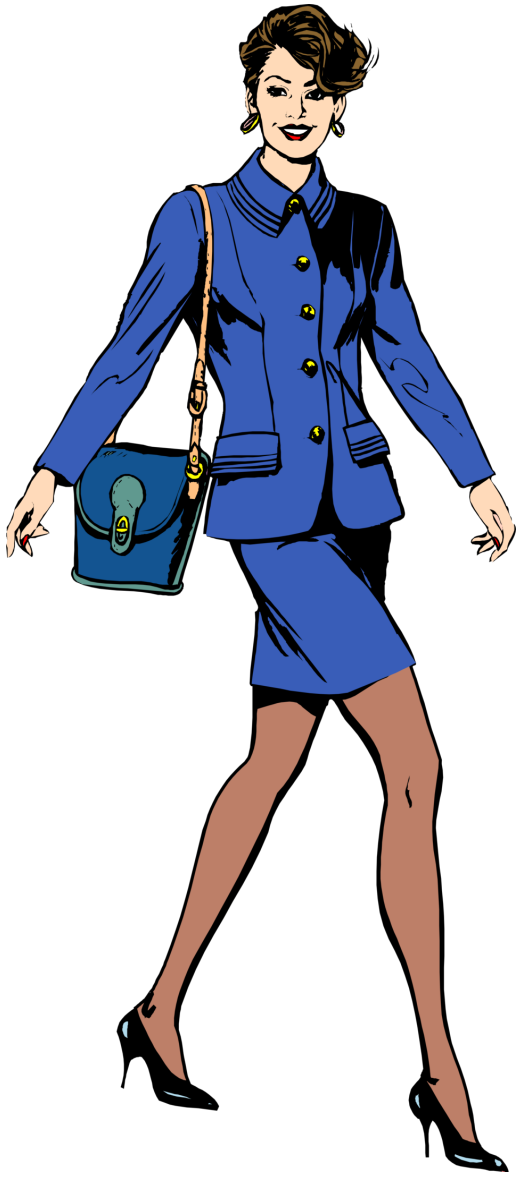
CHANGING PUMPS



Exit Reason Details

1,2 - Auto Mode disabled by user
Auto Mode settings was turned off.


adidas
2020
124TH BOSTON
MARATHON
VIRTUAL EXPERIENCE



BF; hyperfear

- On Medtronic pump
- Does not like the sensor
- Hyperfear; had lows earlier in her diabetes career; prefers 15???

11.7 %	16.0 mmol/L	2.9 mmol/L	HIGH / MODERATE / LOW / MINIMAL	97% / 3% / 0% / 0%	Days with CGM data 93% 13 / 14 Avg. calibrations per day 0.0
Estimated A1C	Average glucose (CGM)	Standard deviation (CGM)	Hypoglycemia risk	Time in range	Sensor usage

We found no patterns during this date range. The best day was October 24, 2019.

1 **Barbara's best glucose day**

Barbara's glucose data was in the target range about 9% of the day.

Family View - Ancestry.ca Endocrinolog...orth America SSL-VPN Portal RDP: physicians.lmc.ca Terrabella Montreal Le blog des ...ée 2017-2018 Live From ADA 2017 2017 McGill F...ourse - Users Car Locksmith...on, Car Keys

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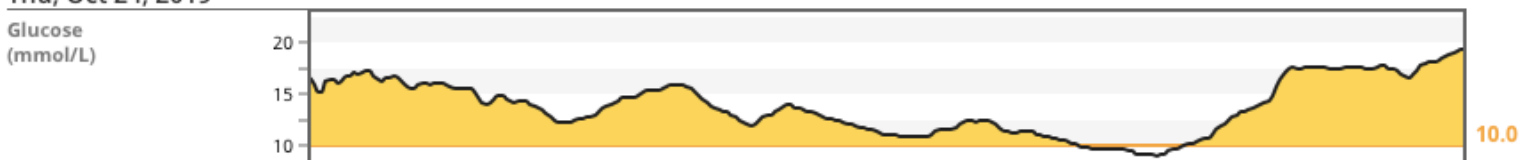
We found no patterns during this date range.
The best day was October 24, 2019.

1 Best Day

1 Barbara's best glucose day

Barbara's glucose data was in the target range about 9% of the day.

Thu, Oct 24, 2019



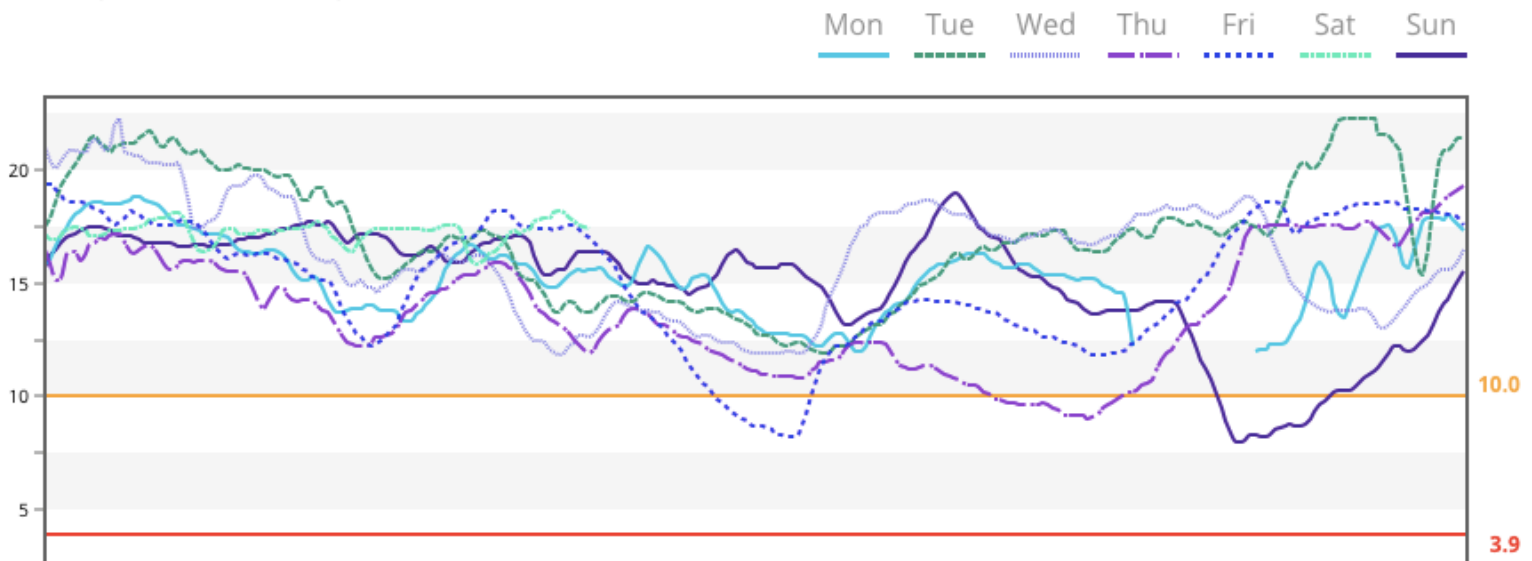
Trends | Overlay | Daily

DAYS | TIME OF DAY | EVENTS | USAGE

CGM | Calibrations

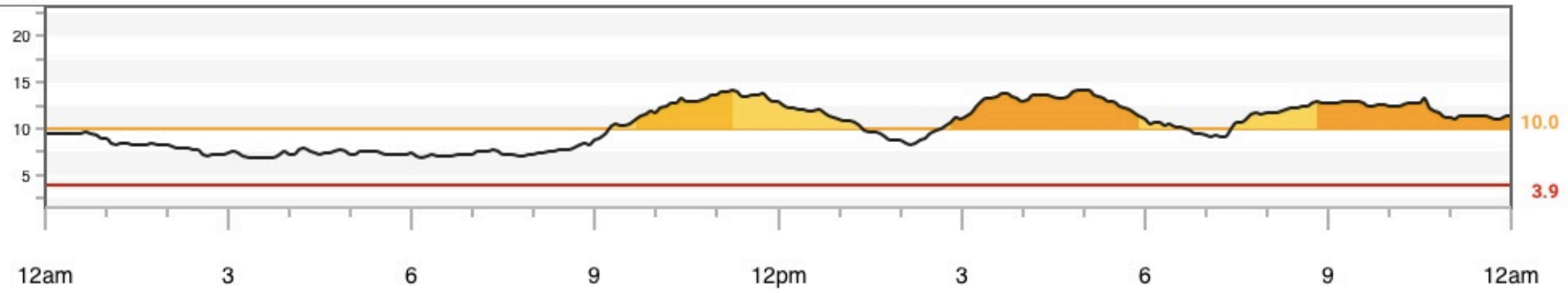
Week 2

Sun Oct 20, 2019 - Sat Oct 26, 2019



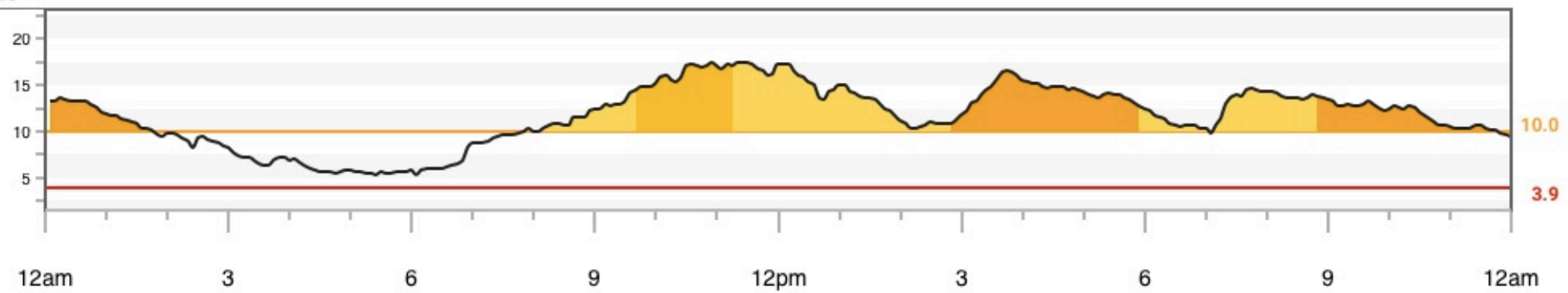
on, Sep 14, 2020

ucose
mol/L)



un, Sep 13, 2020

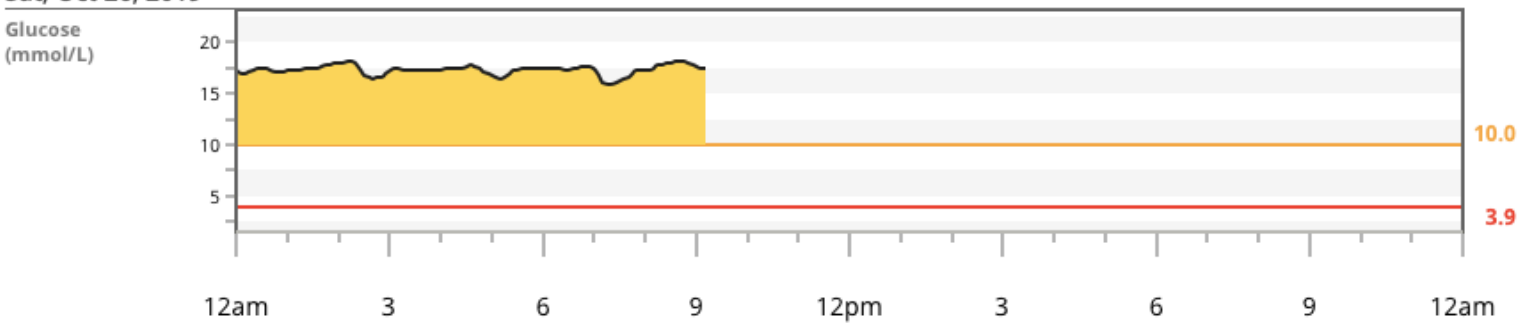
ucose
mol/L)



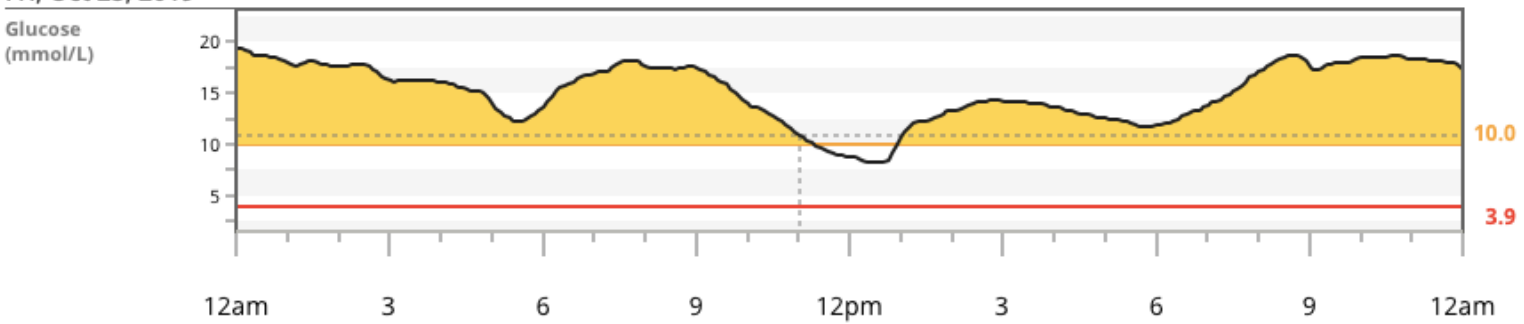
4:34 AM	4:44 AM	5:09 AM	5:34 AM	6:04 AM
Low	Low	Low	Low	Low

14 days | Sun Oct 13, 2019 - Sat Oct 26, 2019

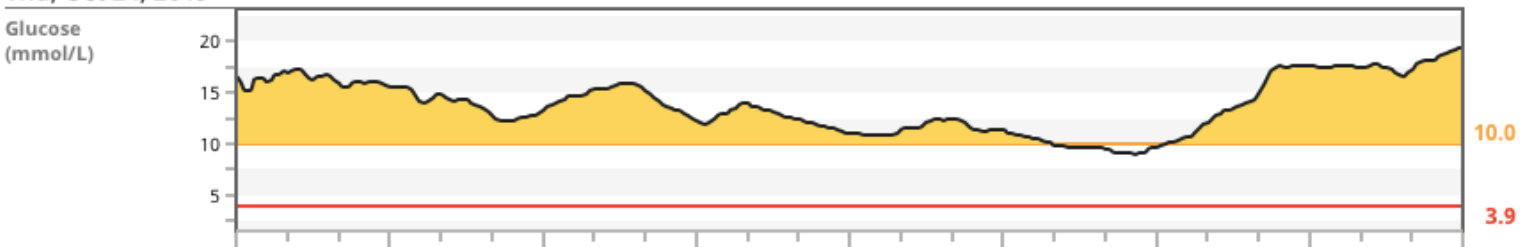
Sat, Oct 26, 2019



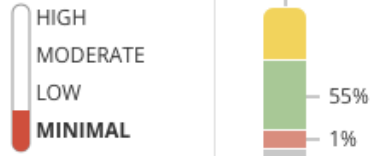
Fri, Oct 25, 2019



Thu, Oct 24, 2019



8.1 %	10.2	3.6			
	mmol/L	mmol/L			
Estimated A1C	Average glucose (CGM)	Standard deviation (CGM)	Hypoglycemia risk	Time in range	Sensor usage



Days with CGM data 93%
13 / 14

Avg. calibrations per day 0.0

We found 1 pattern during this date range. The best day was October 18, 2019.