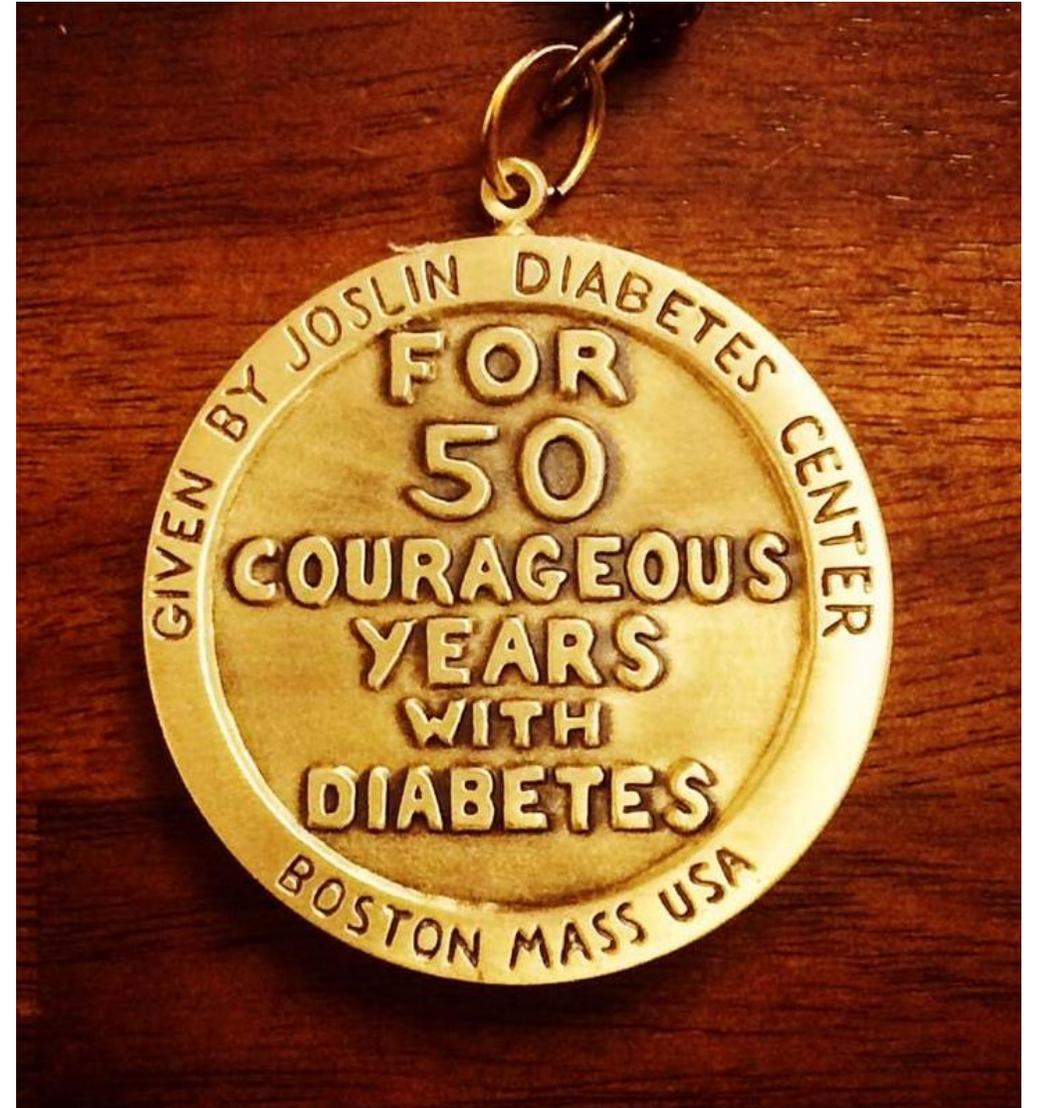Stephen W. Ponder MD, FAAP, CDE
Professor

I have no conflicts of interests to report

Aims

- The Origins of Sugar Surfing

- Static vs. Dynamic Self Care

- Sugar Surfing Terms/Images

- Illustrate Sugar Surfing Methods

We stopped counting after 65 countries...Sugar Surfing is global

15% in the U.K.

However

when coupled with

FREQUENT REVIEW

of at least once per week, patients across all demographics experience a clinically significant difference in measured skills, aptitude and resulting blood sugar control.*

(ie - Frequent Pattern Management: FPM)

* Diabetes Care. 2012 March; 35(3): 498–502.

Diabetes care must be individualized

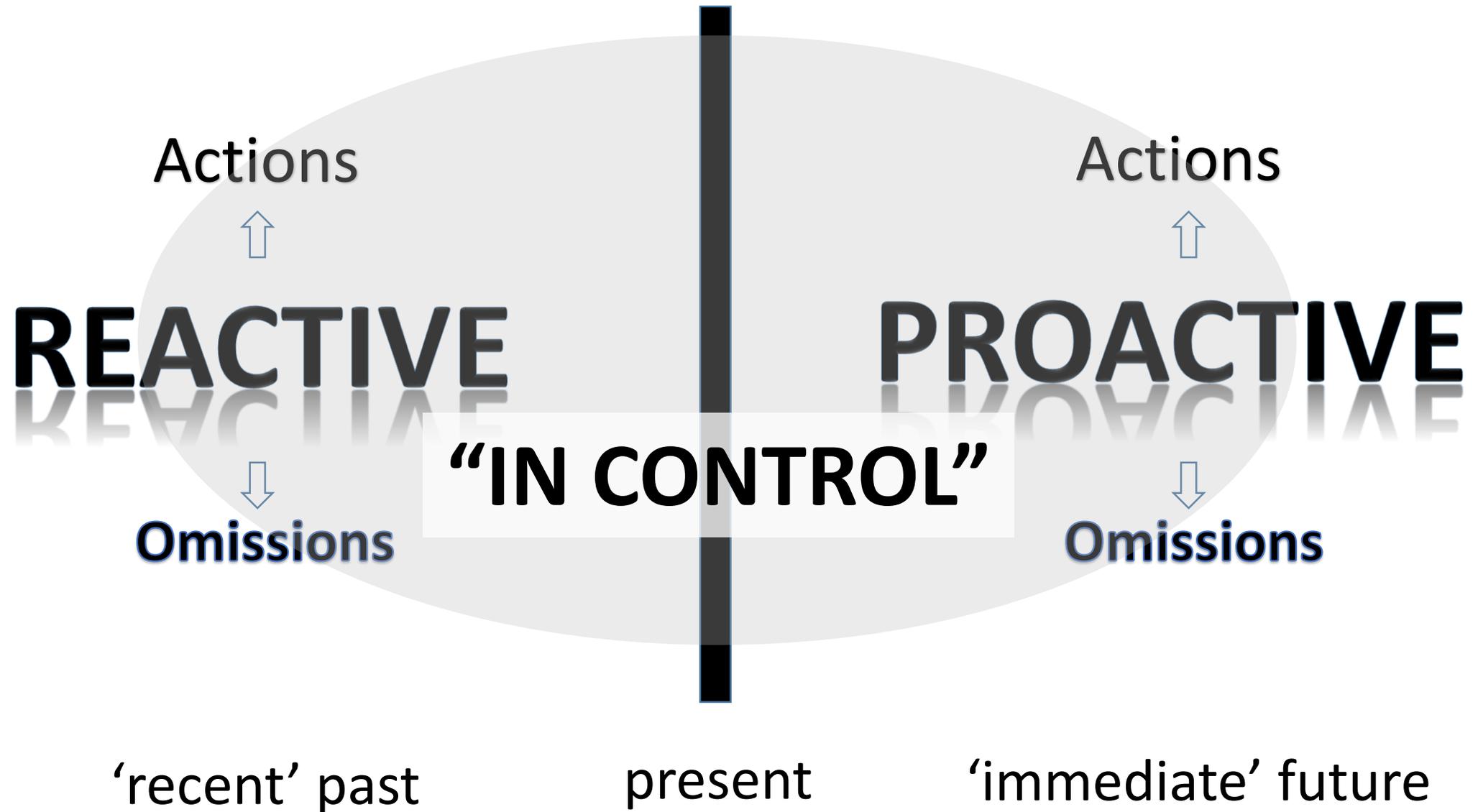American Diabetes Association Standards of Medical Care in Diabetes—2017

Defining "Sugar Surfing™"

"Dynamic Diabetes Self-Management".

Based on *frequent pattern management*

Sugar Surfing is "next level" self-care

Conceptual framework for *Sugar Surfing™*
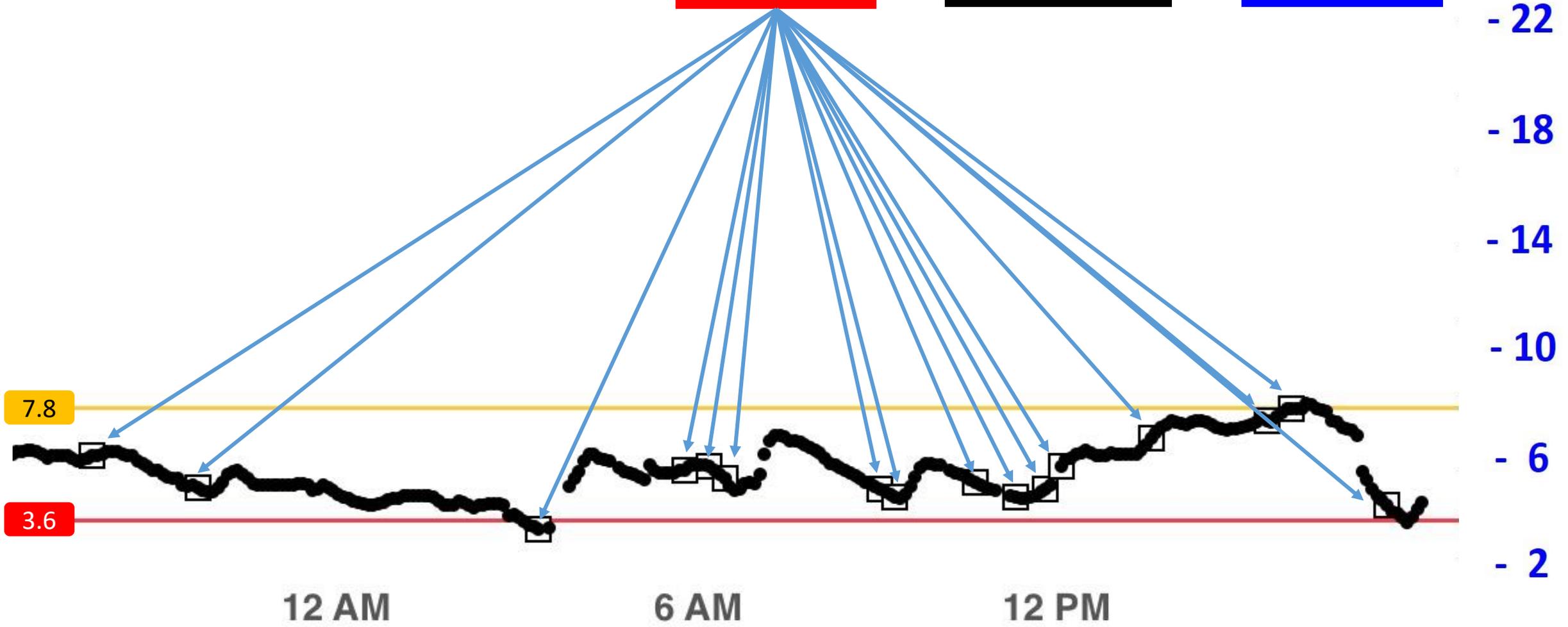
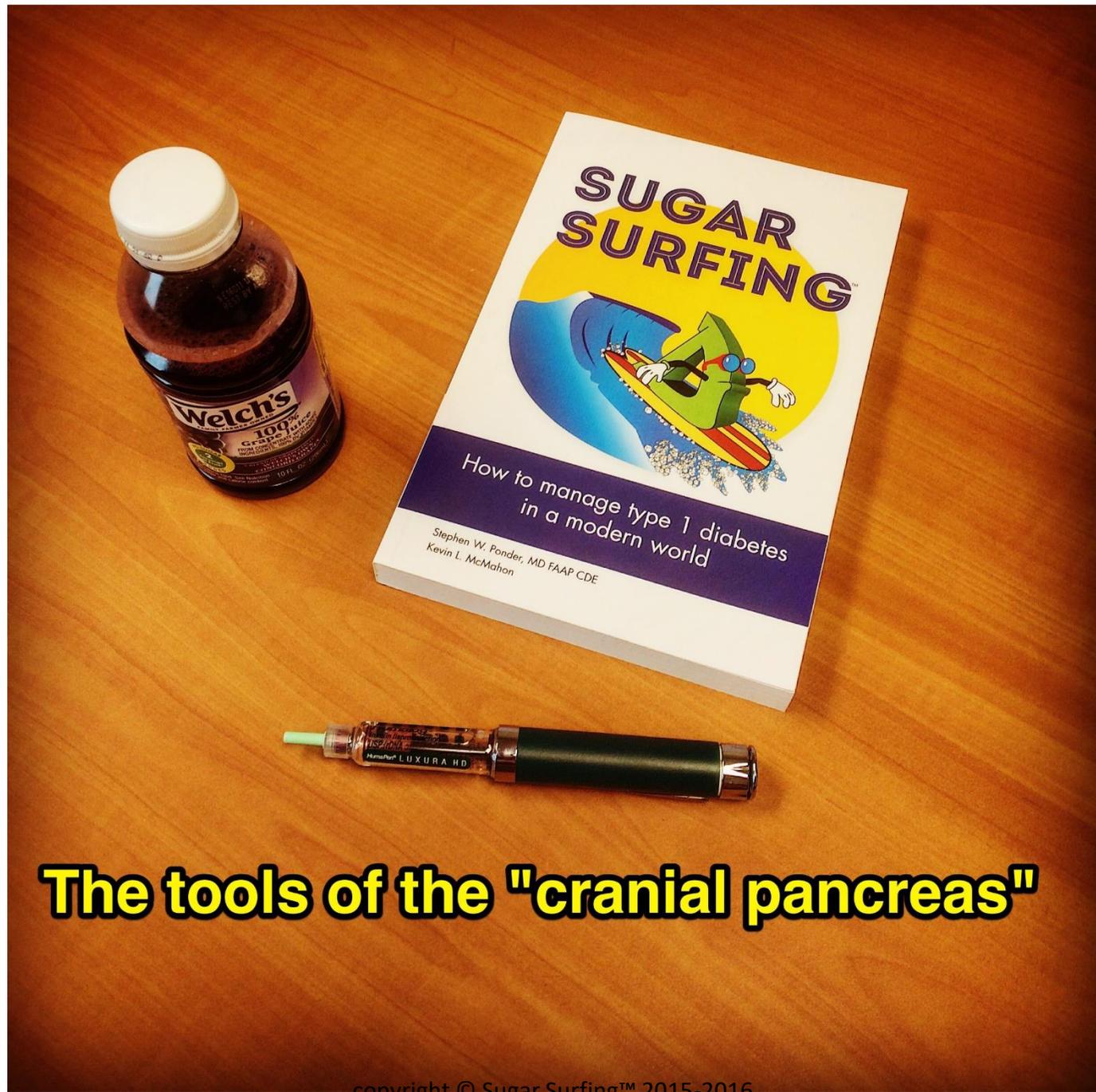# Low carb eating may calm the waters, but…

Stress
Insulin pump failure
Denatured insulin
Basal insulin tuning
etc…must be surfed

Sugar Surfing™ isn't about "controlling everything"

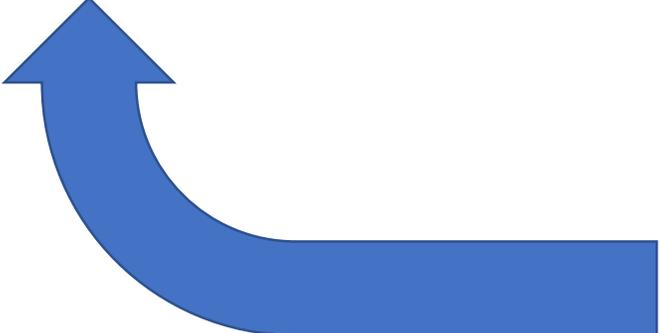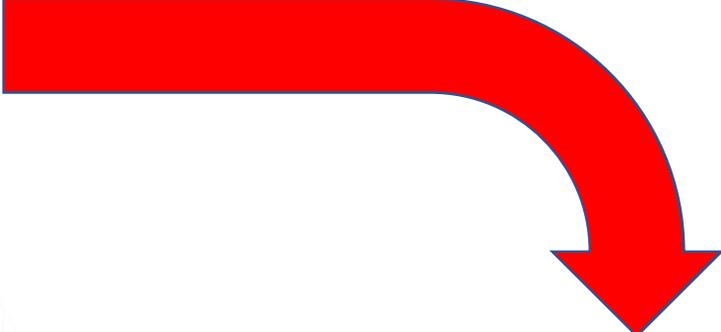The tools of the "cranial pancreas"
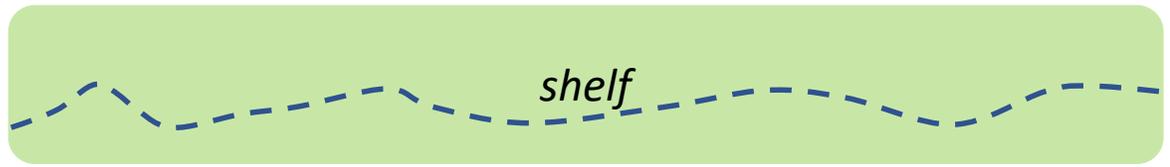
S.U.R.F.

See the patterns

Understand their Significance

Respond appropriately

Follow up carefully

"Pattern anatomy"

1 hour
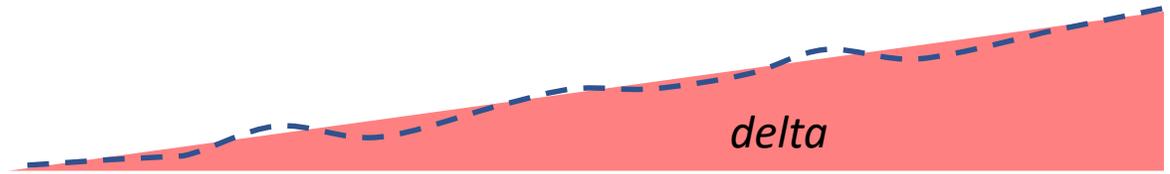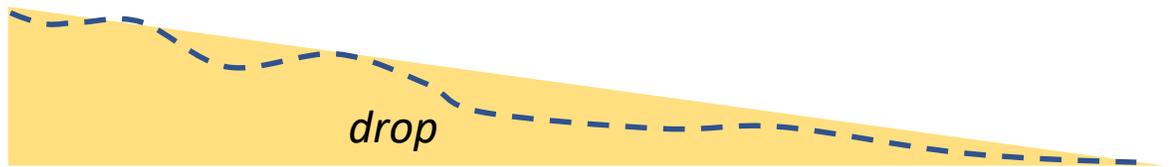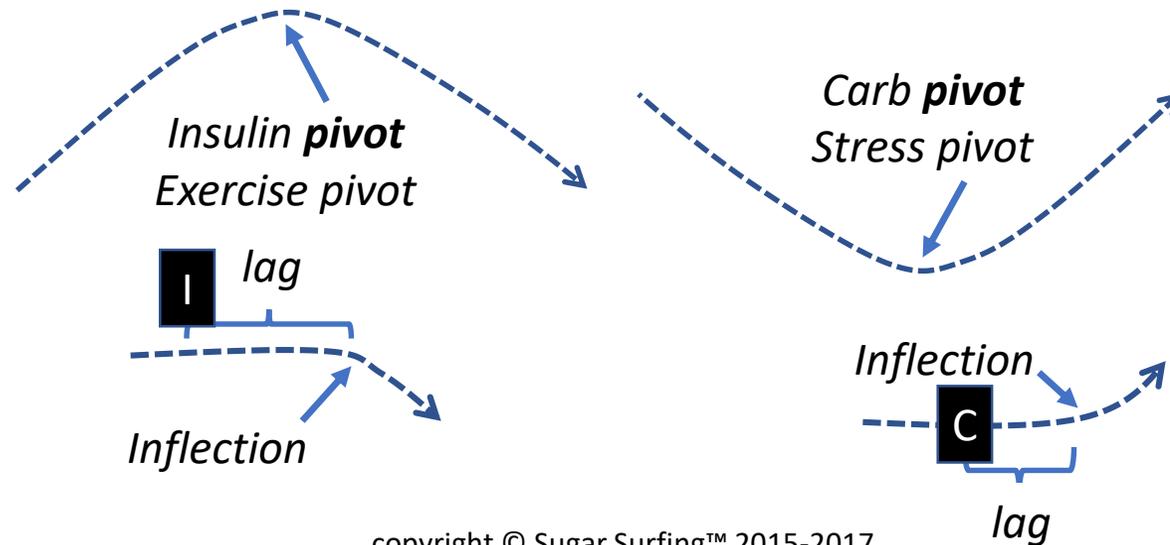
shelf — 2 mmol/L — shelf

delta — 2 mmol/L — delta

drop — 2 mmol/L — drop

Insulin **pivot**
Exercise pivot

Carb **pivot**
Stress pivot

pivot

I   lag

Inflection

Inflection

C

lag

inflection

lag

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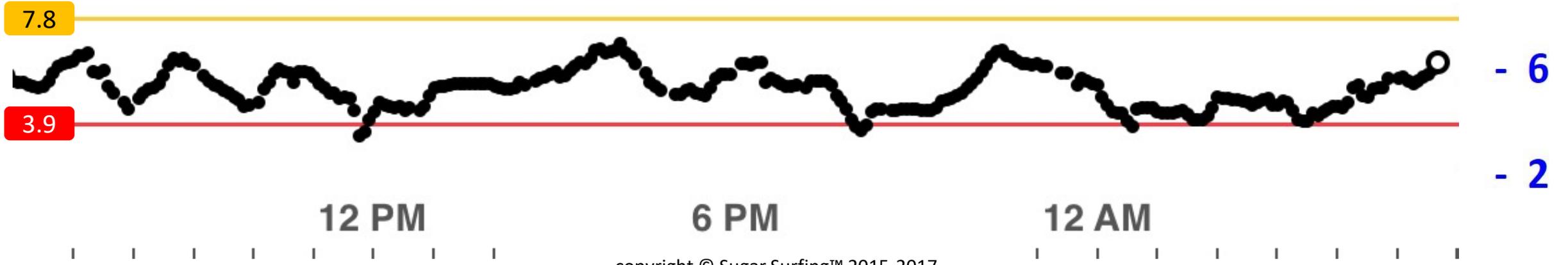
*The point is that every "day of surfing" is never exactly the same: variability is **expected***
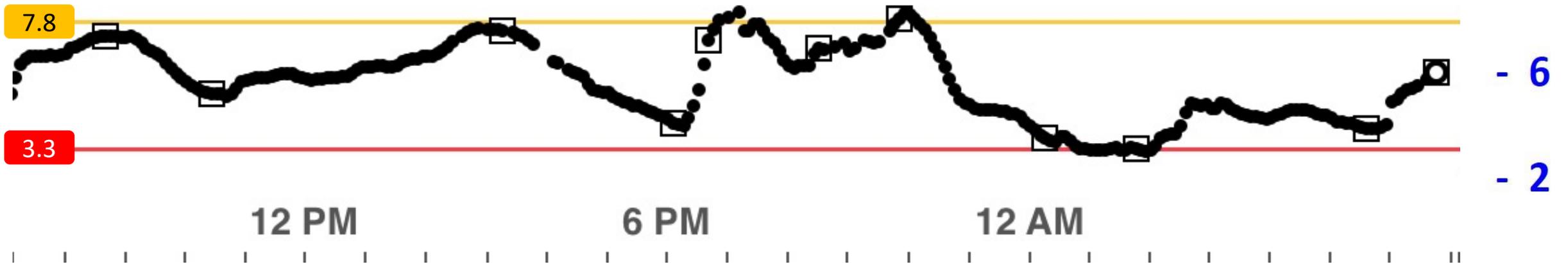
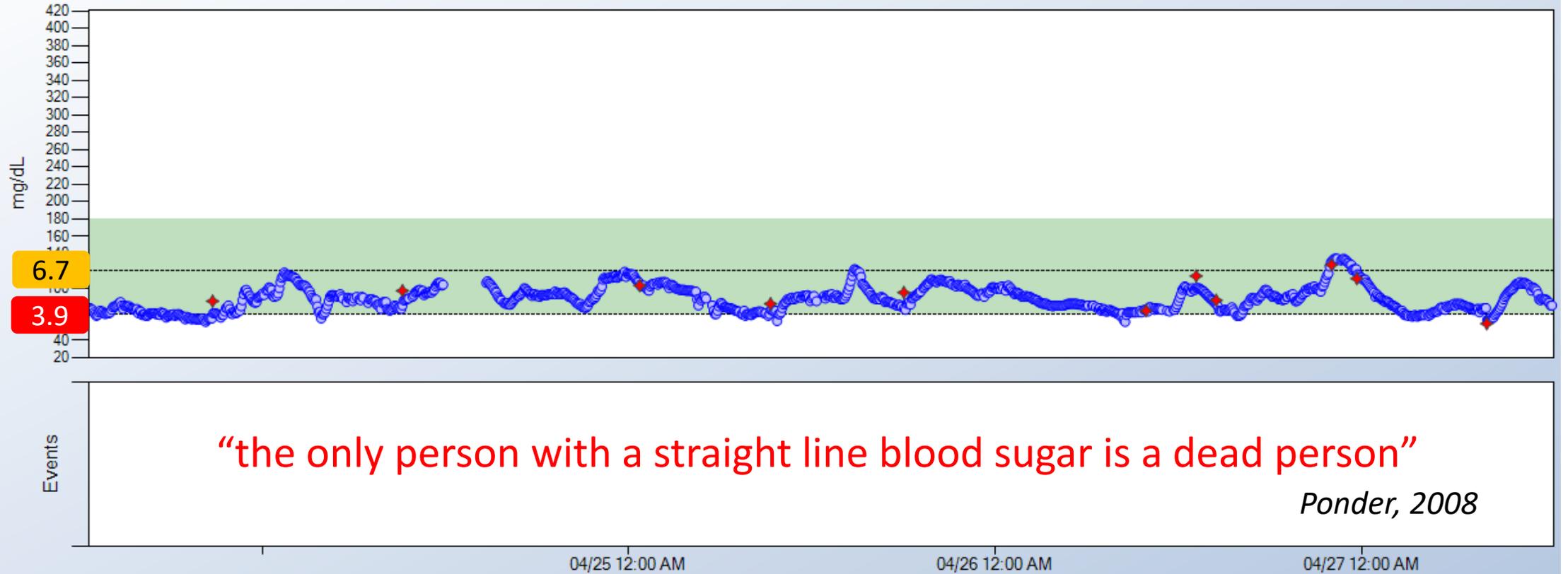# Appreciate the <u>flux</u> of sugar levels in non-d persons
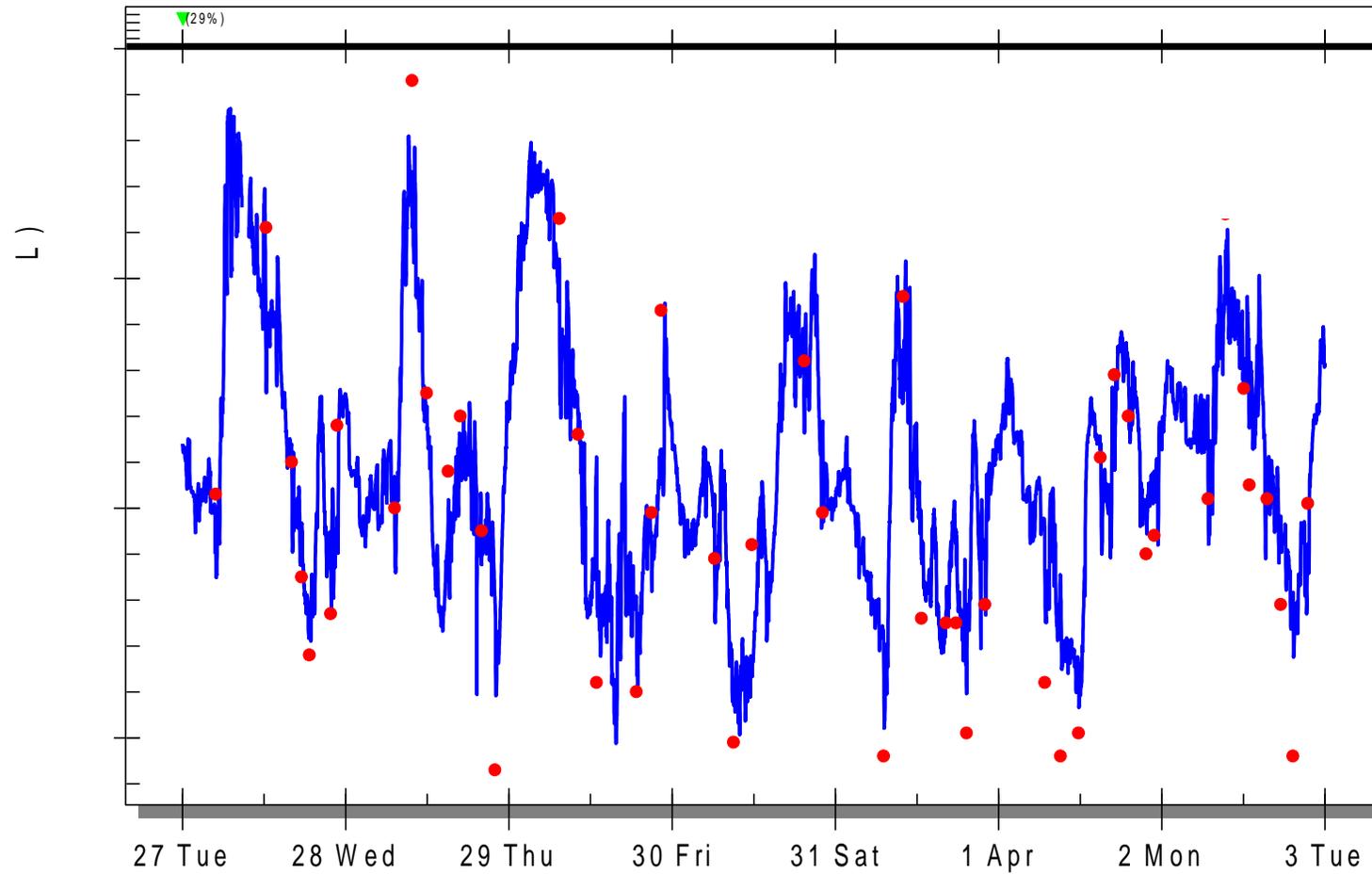
4 day non-diabetic CGM plot

"the only person with a straight line blood sugar is a dead person"

Ponder, 2008

Which one reveals uses an insulin pump?
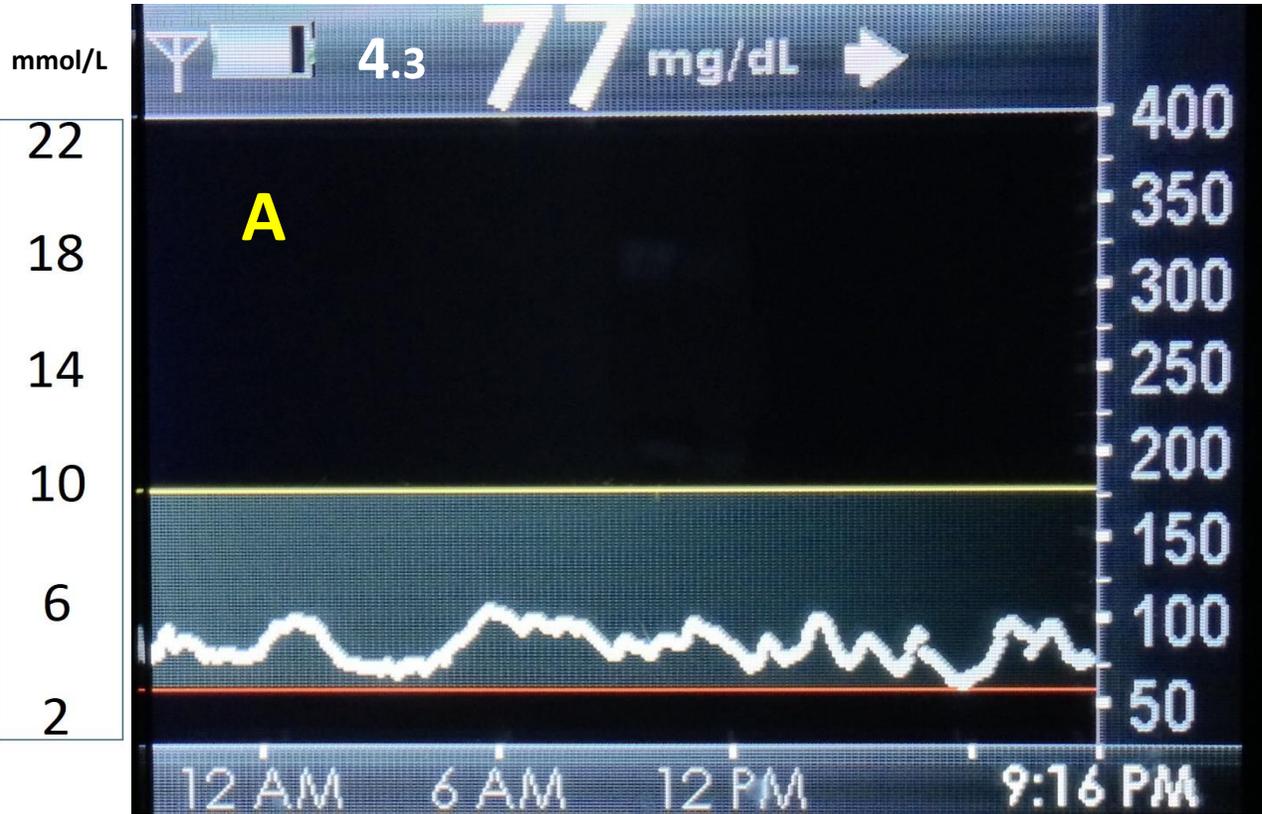
Which user is non-d?
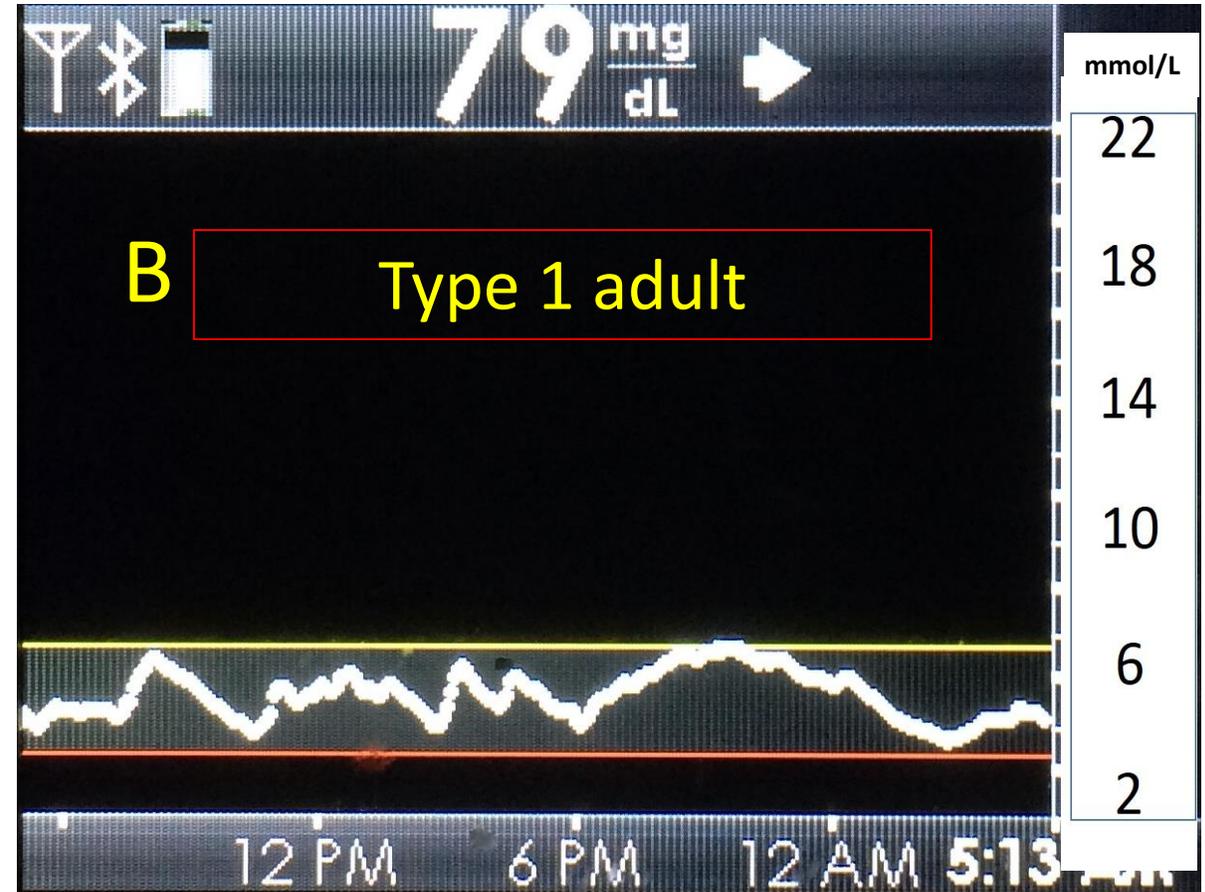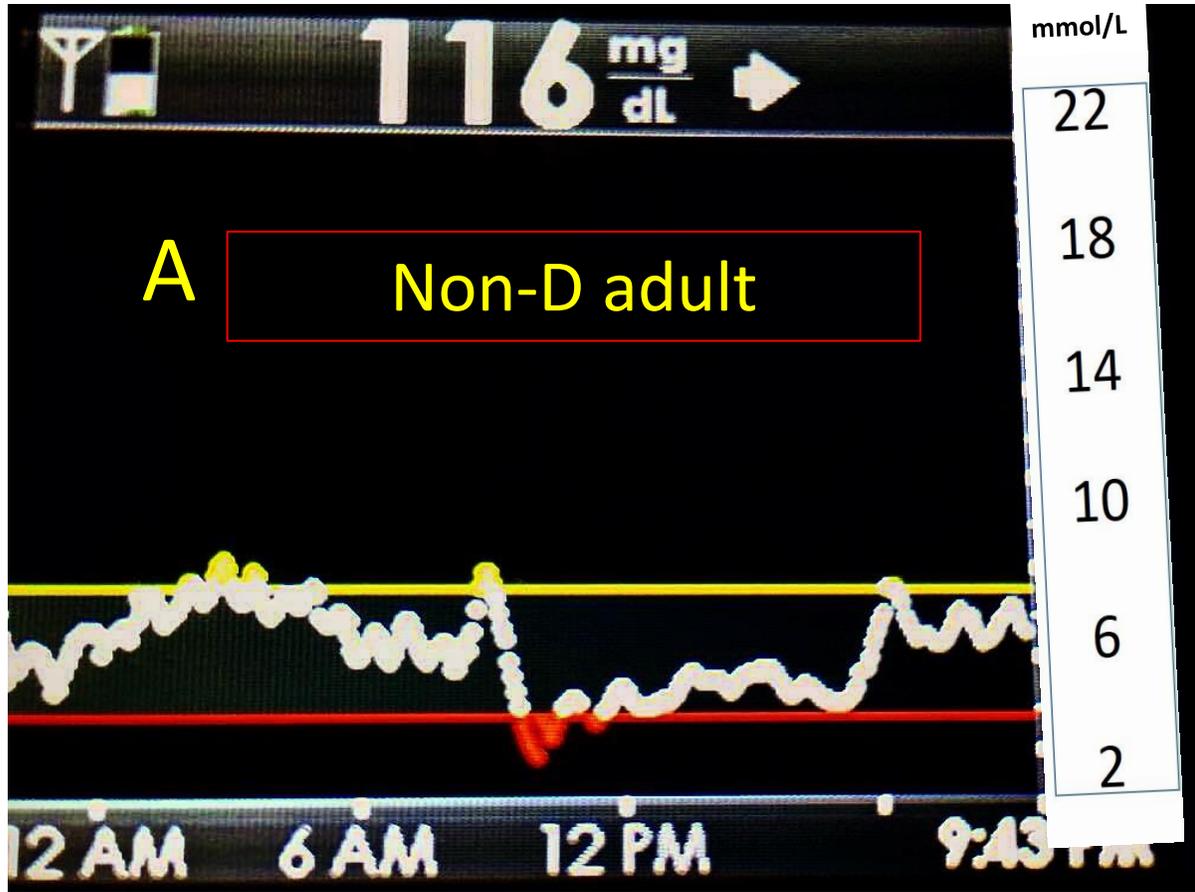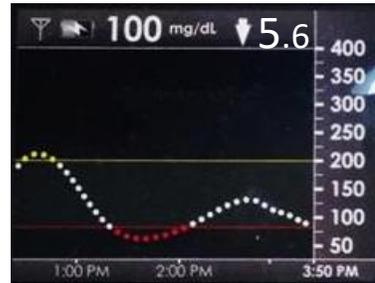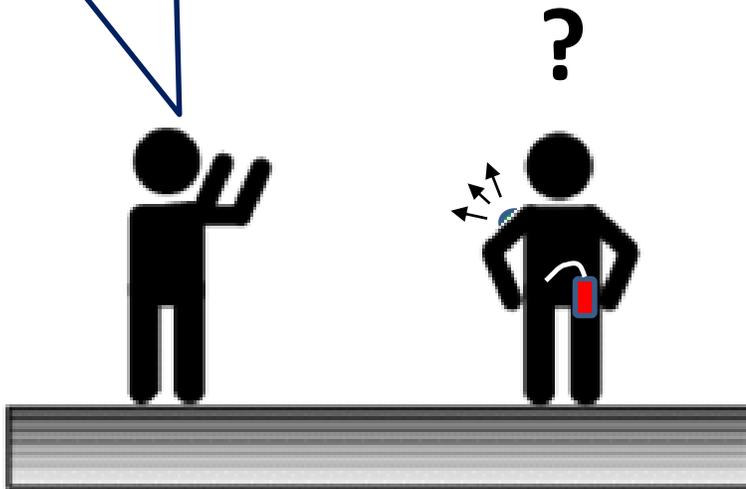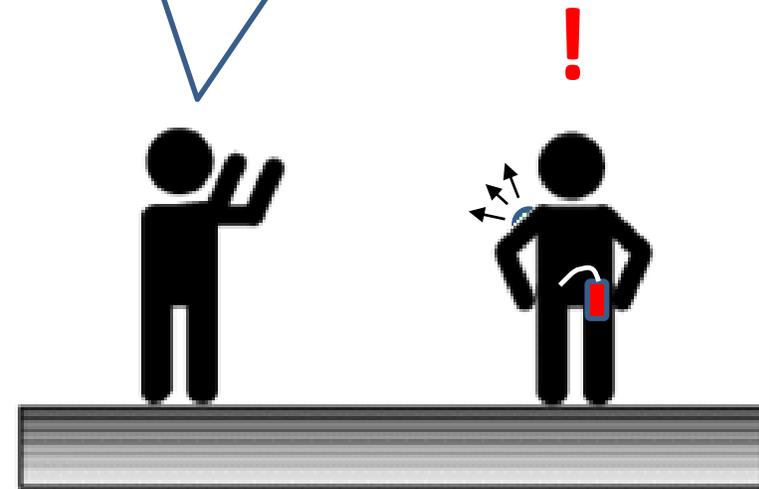
Determining significance: take *C.A.R.E.*

*C*urrent (what are you doing now)

*A*nticipated (actions/omissions)

*R*ecent (actions/omissions)

*E*xperience (your own)

Significance is situationally dependent

Significance: patient determines

12 mmol/L — *shelf* — 10 mmol/L   Act or not act?

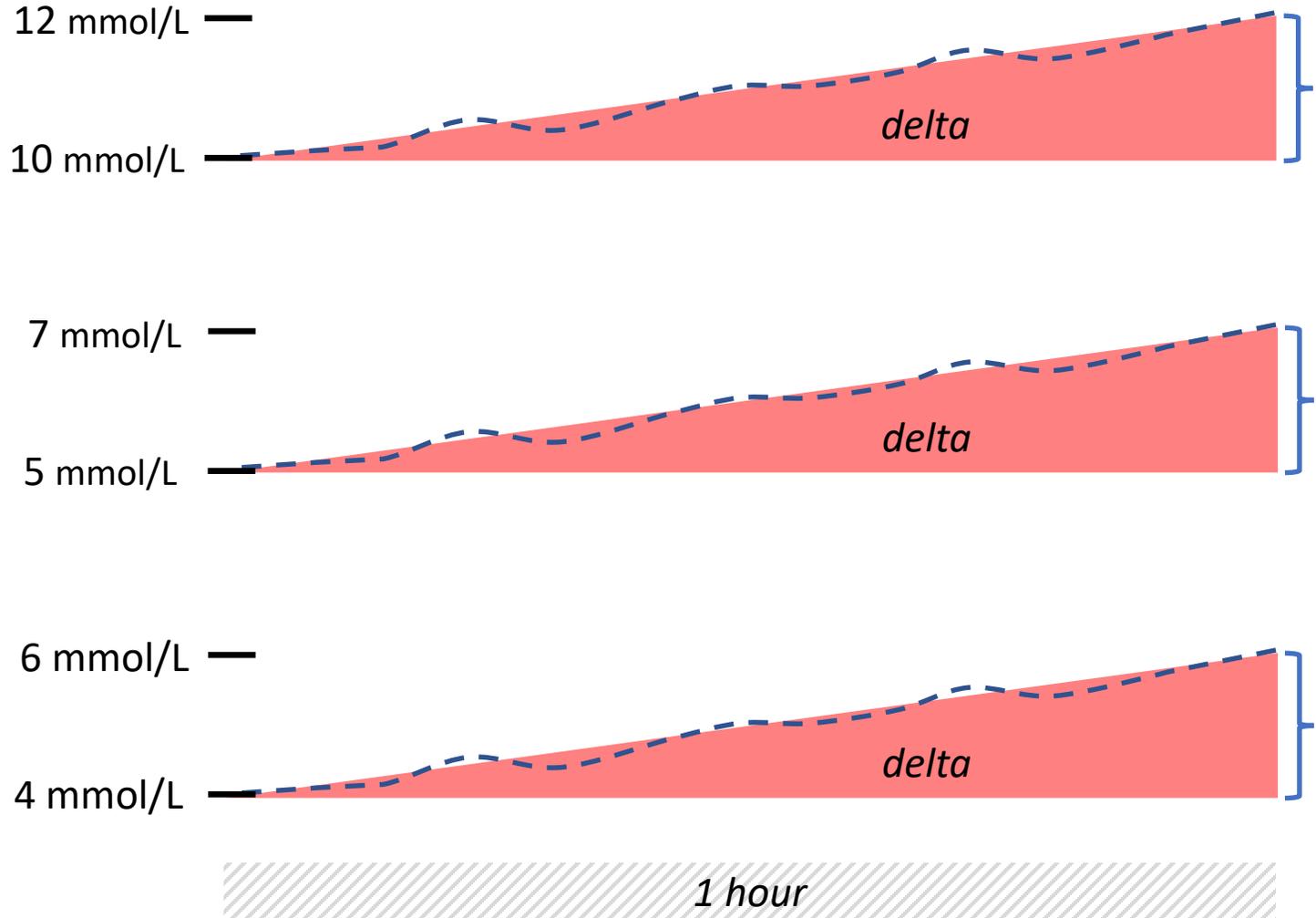7 mmol/L — *shelf* — 5 mmol/L   Act or not act?

4 mmol/L — *shelf* — 2 mmol/L   Act or not act?

1 hour

Significance: patient determines

12 mmol/L

10 mmol/L

drop

Act or not act?

7 mmol/L

5 mmol/L

drop

Act or not act?

6 mmol/L

4 mmol/L

drop

Act or not act?

1 hour
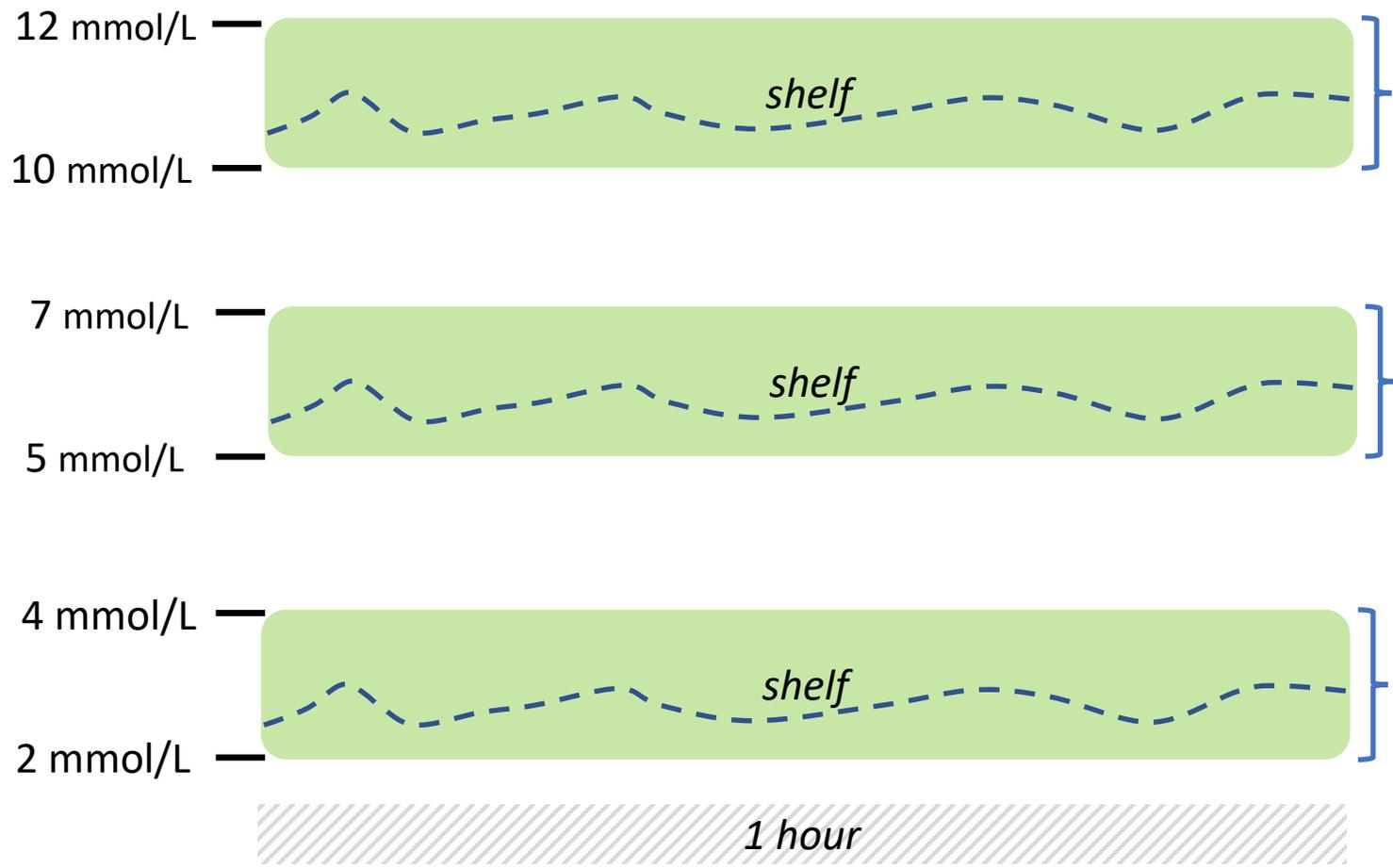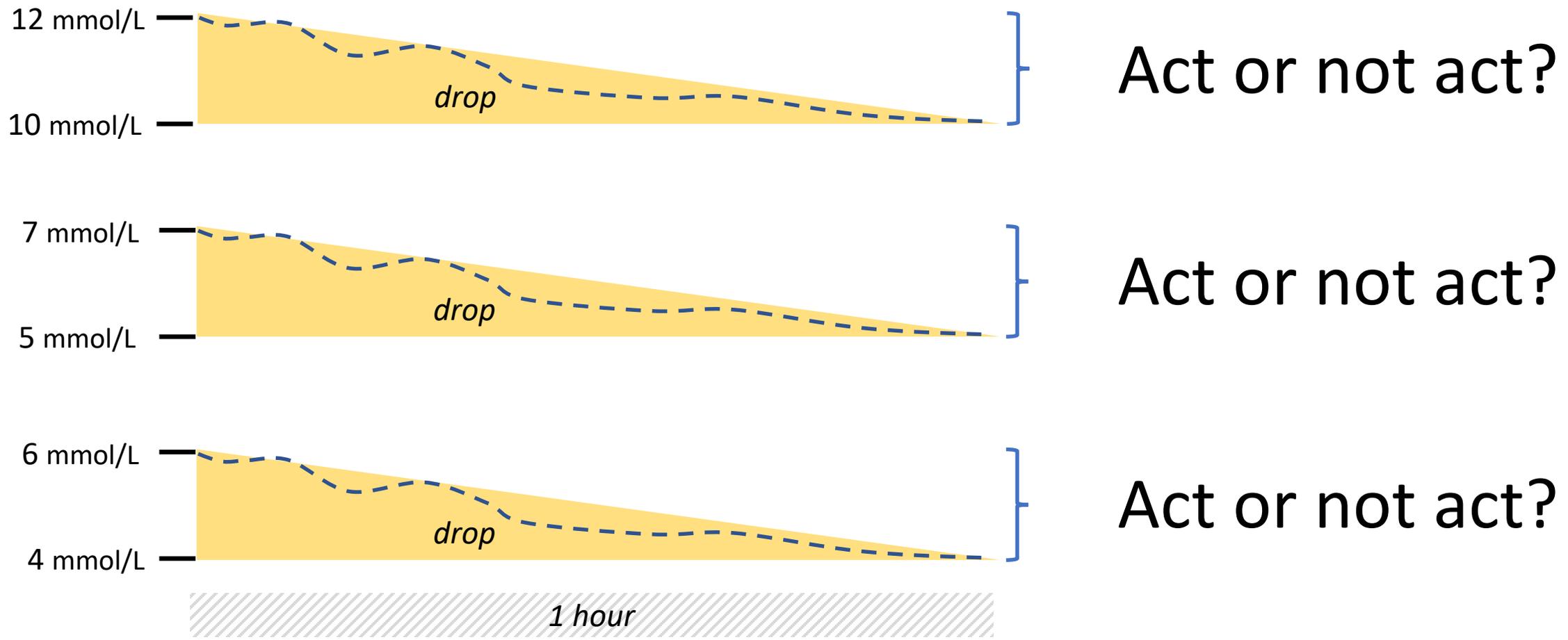
Sugar Surfing exists at the intersection of....
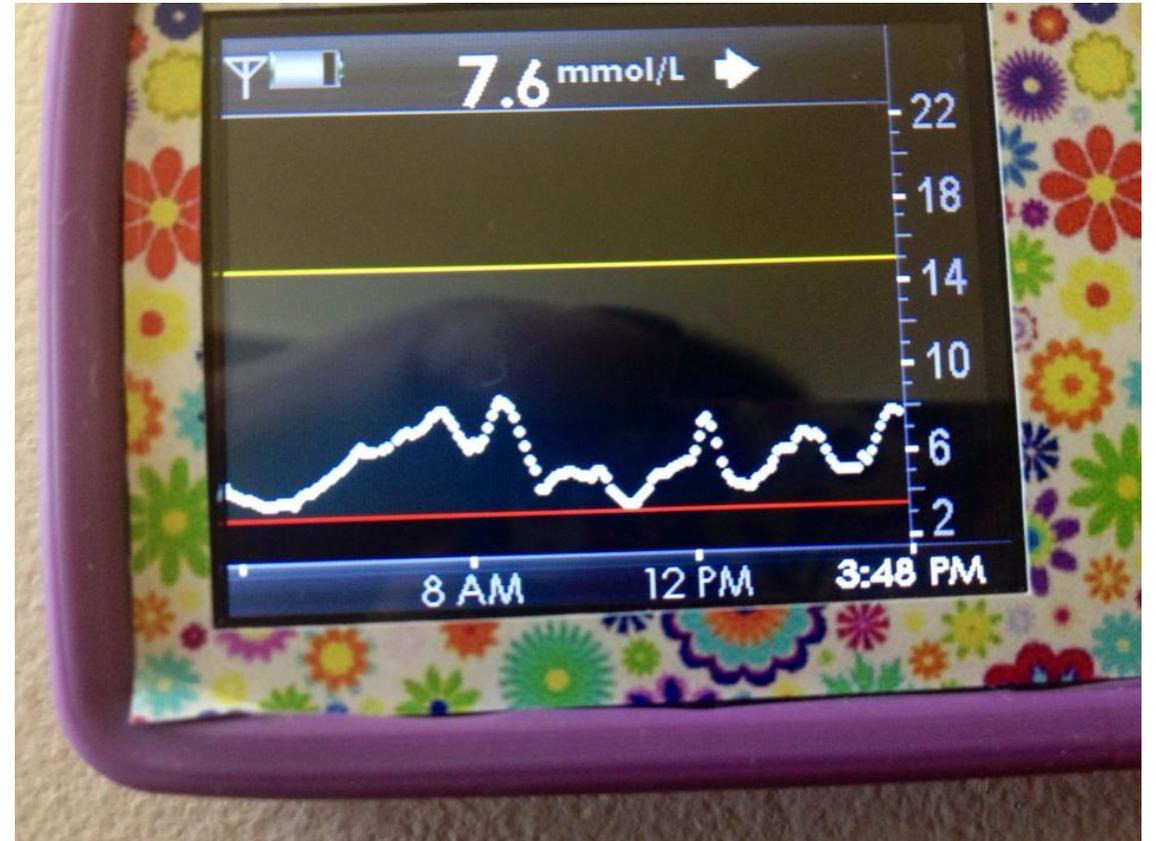

thinking
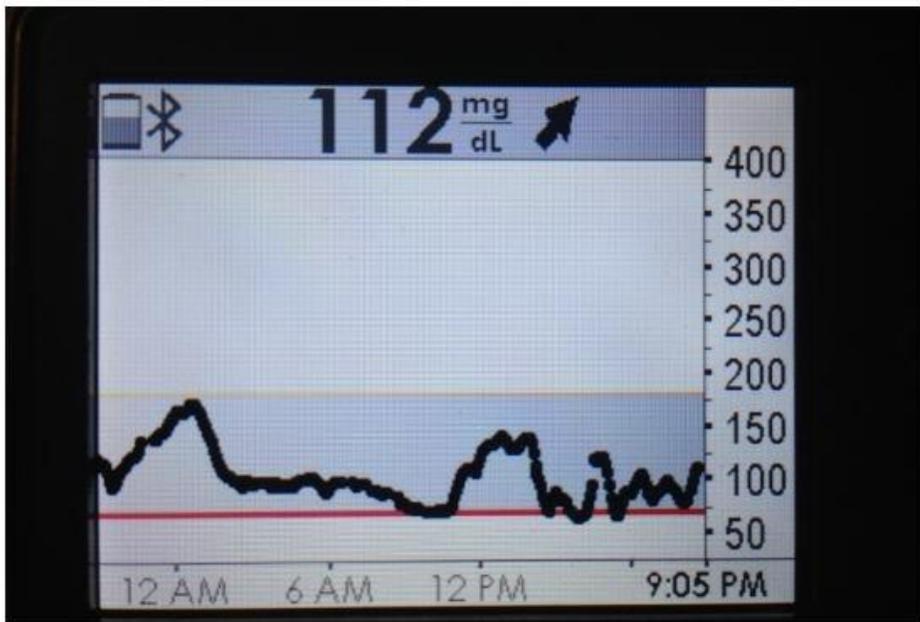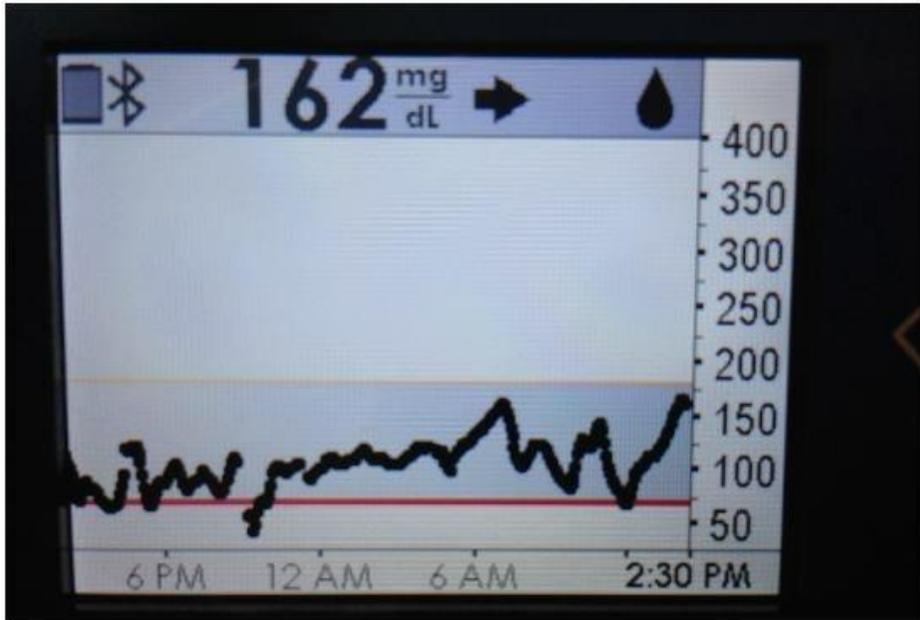
A 7 year old in Canada

7 year old
T1 D child
1 day after
Minneapolis
workshop
(*"pivoting"*)
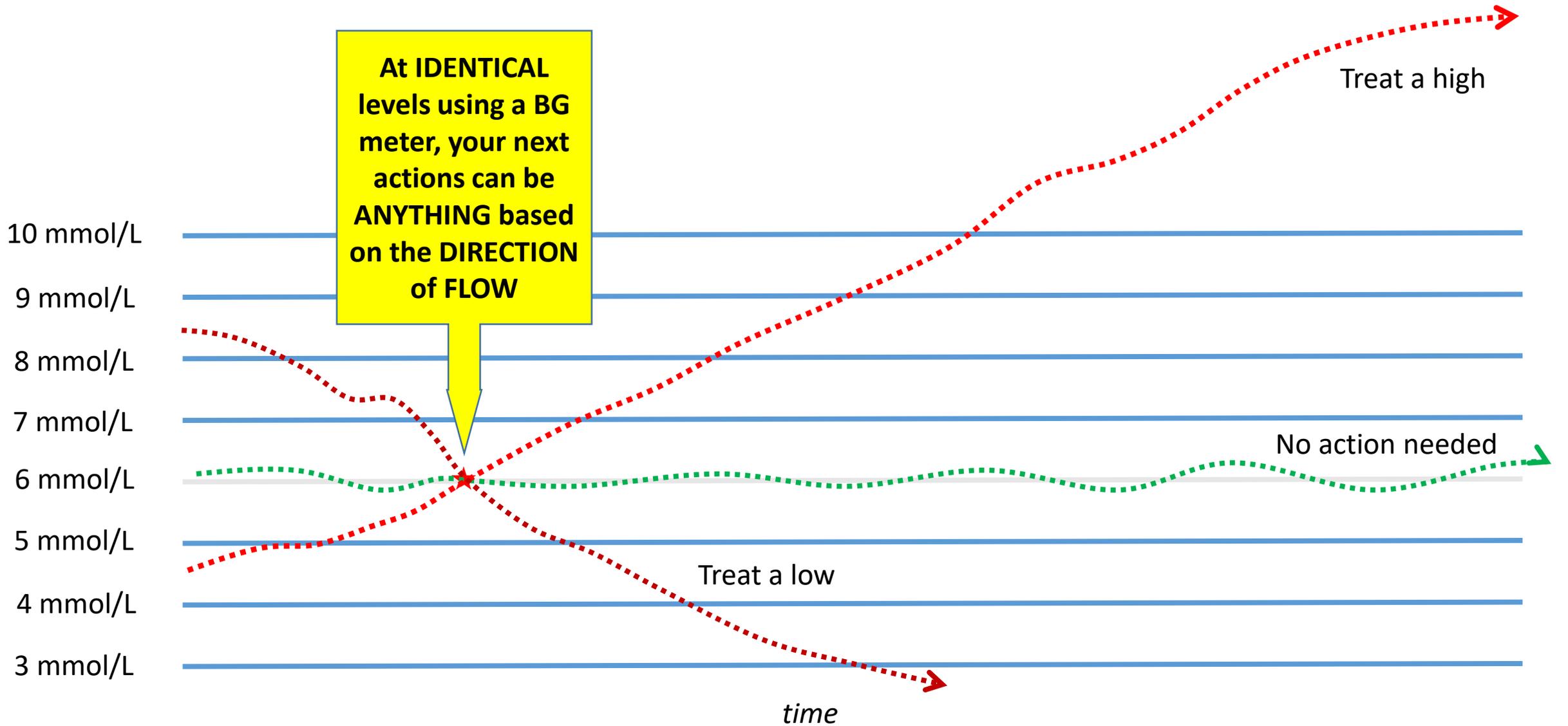
Sugar Surfing

- It's "Dynamic Diabetes Self Management"
- aka *"Management in the Moment"*
- It's a *process*, <u>not</u> a formula/prescription
- Can be used with pump or injection therapy
- CGM not required…but makes it MUCH easier
- "Surfing" leverages dynamic thinking in proactive and reactive ways
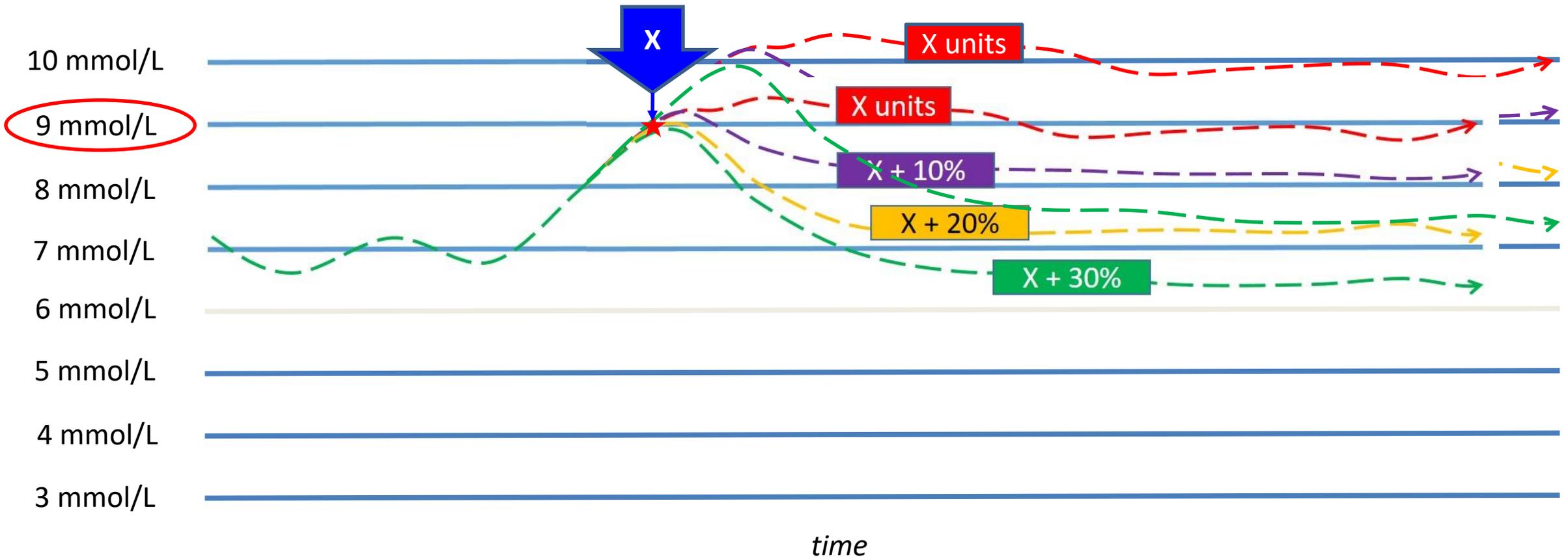- Sugar Surfing is a true paradigm shift in d-care

"Direction affects correction"

copyright © Sugar Surfing™ 2015-2017

"Deflect and correct"
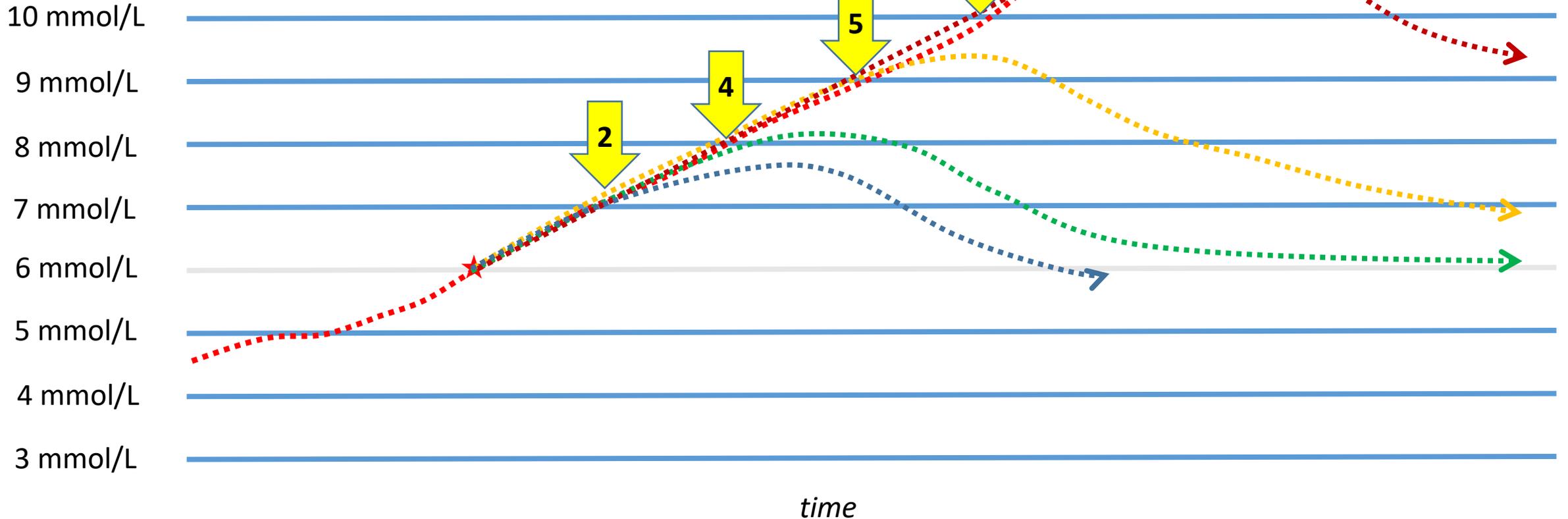
Practicing lower pivot points can/will lower the flux
...and lower the A1c

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Practice *higher* dosing thresholds when first learning to pivot

Once comfortable, then *LOWER* the pivot action threshold
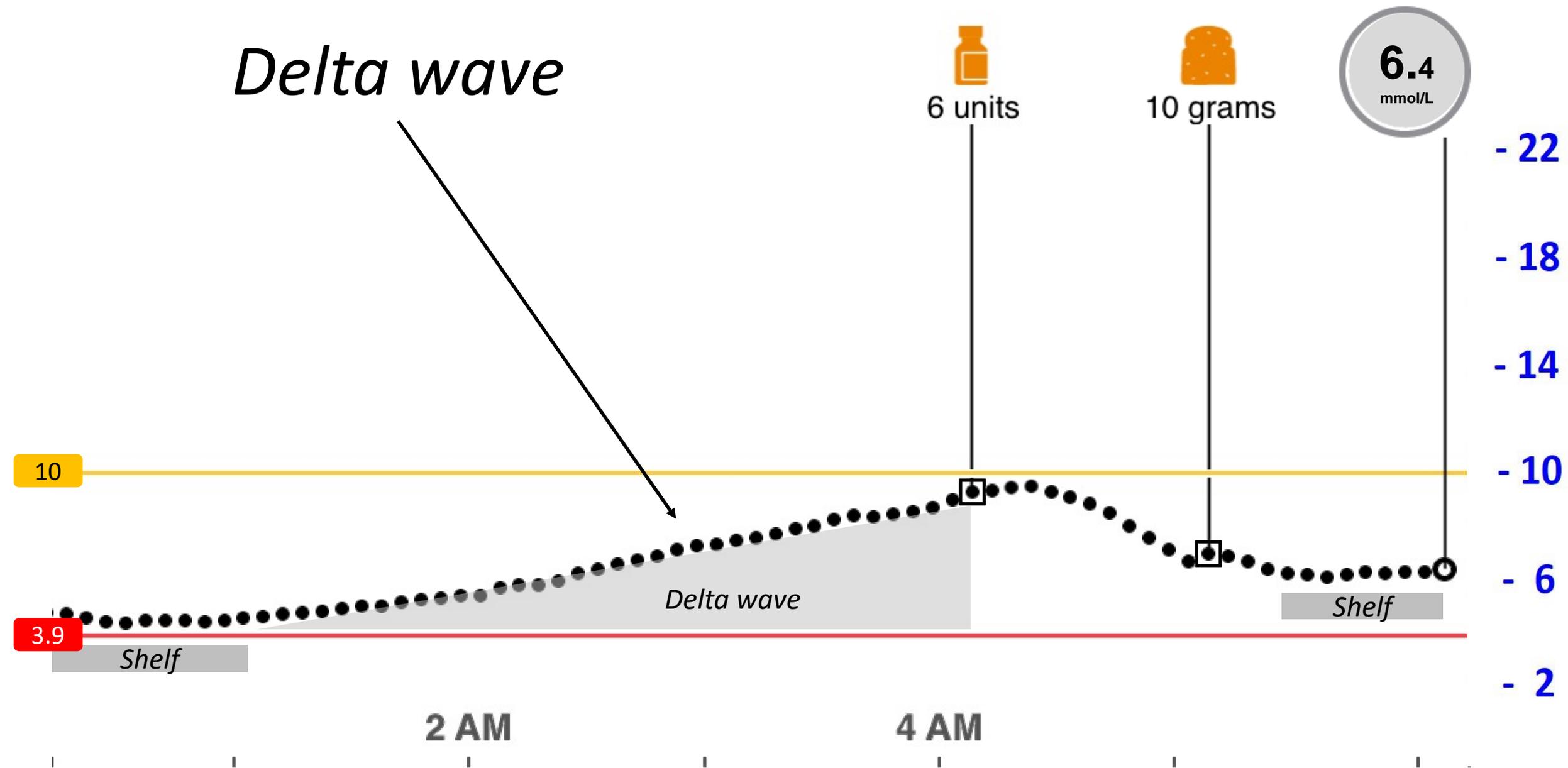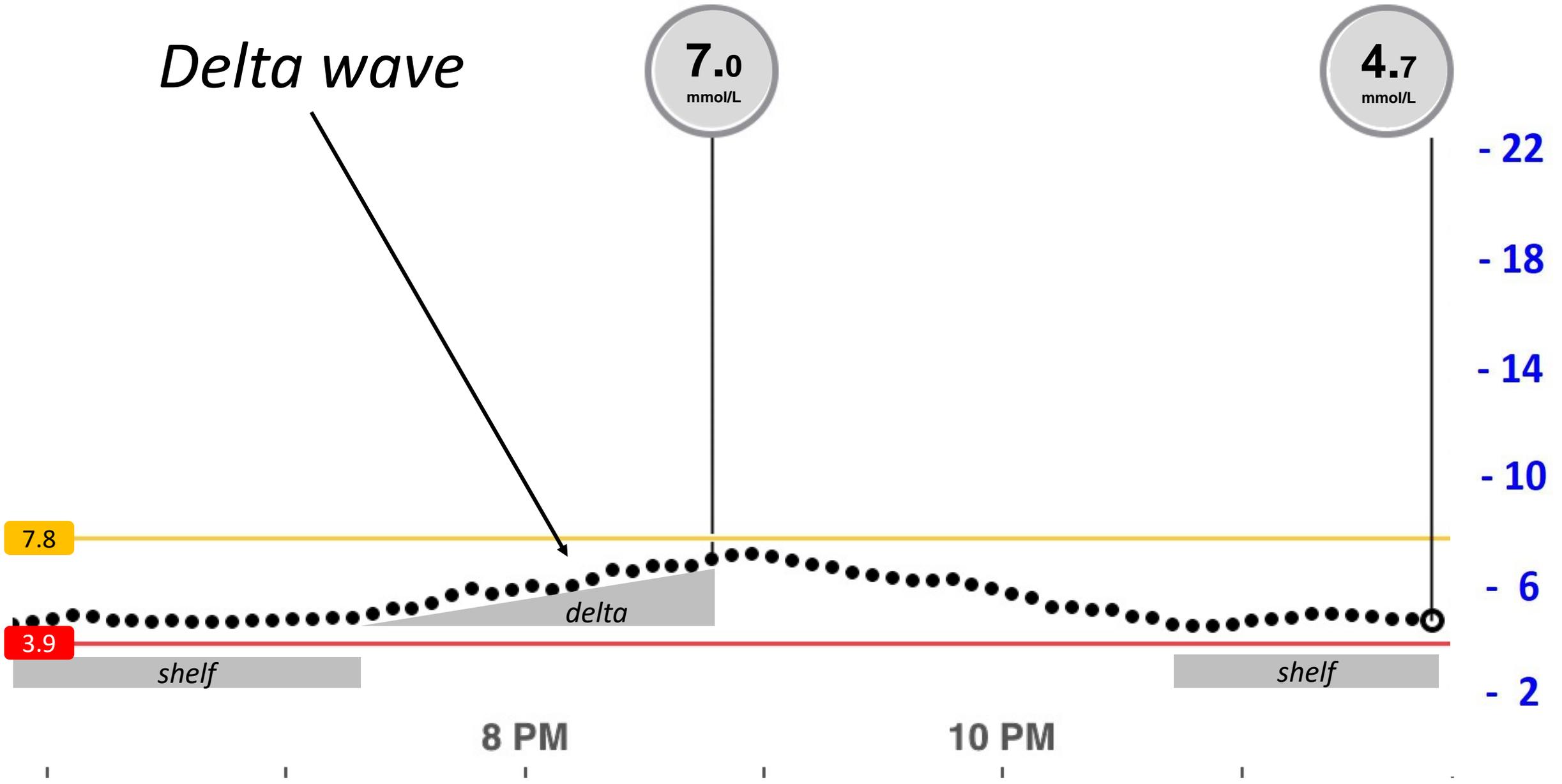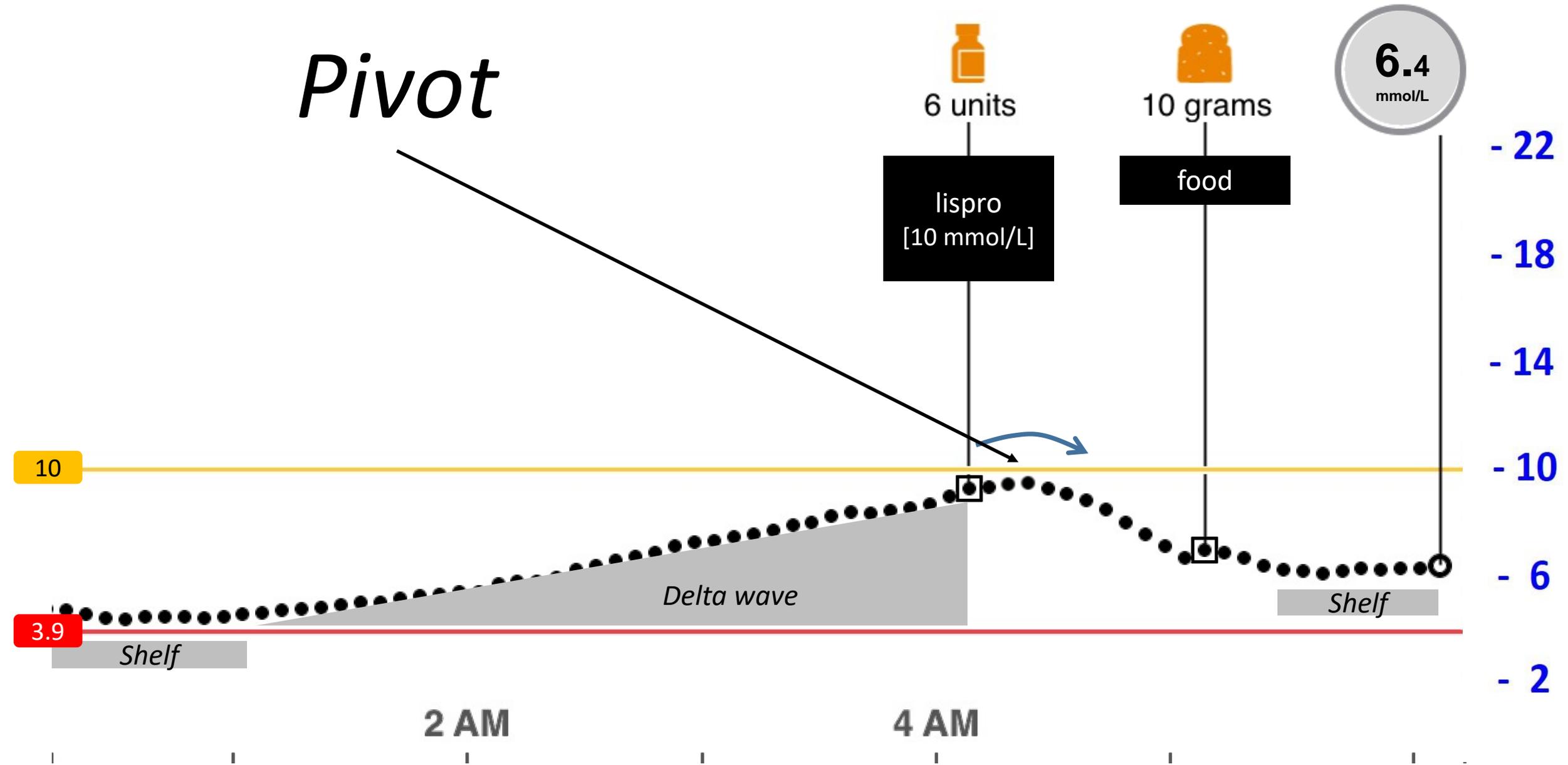
"aim small at first"

2 3 4 5   Units of rapid-acting insulin

10 mmol/L

shelf

nudge

9 mmol/L

8 mmol/L

7 mmol/L

drop

6 mmol/L

5 mmol/L

2 hours

4 mmol/L

3 mmol/L

time
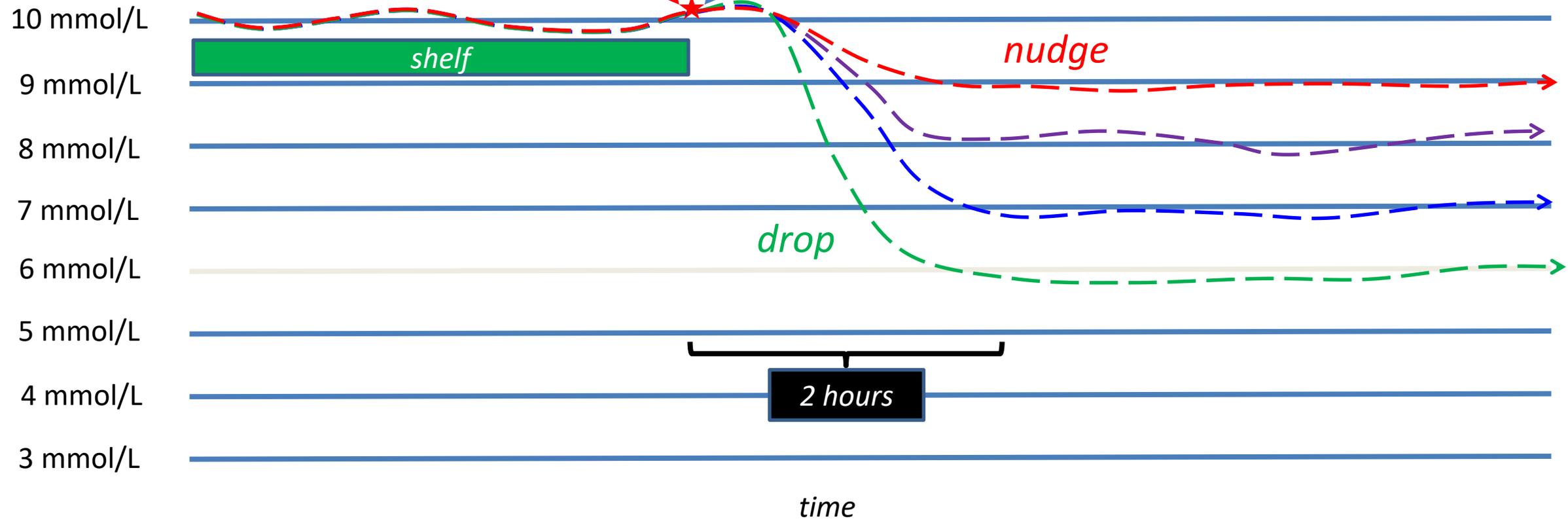
Learn micro-dosing at *higher* starting points first *("shelf")*

Classic Sugar Surfing maneuver: "taking the drop"

100 mg/dL

"X" Units rapid insulin

drop

lag

Steady basal effect

2 hours

2 AM   4 AM   6:44 AM
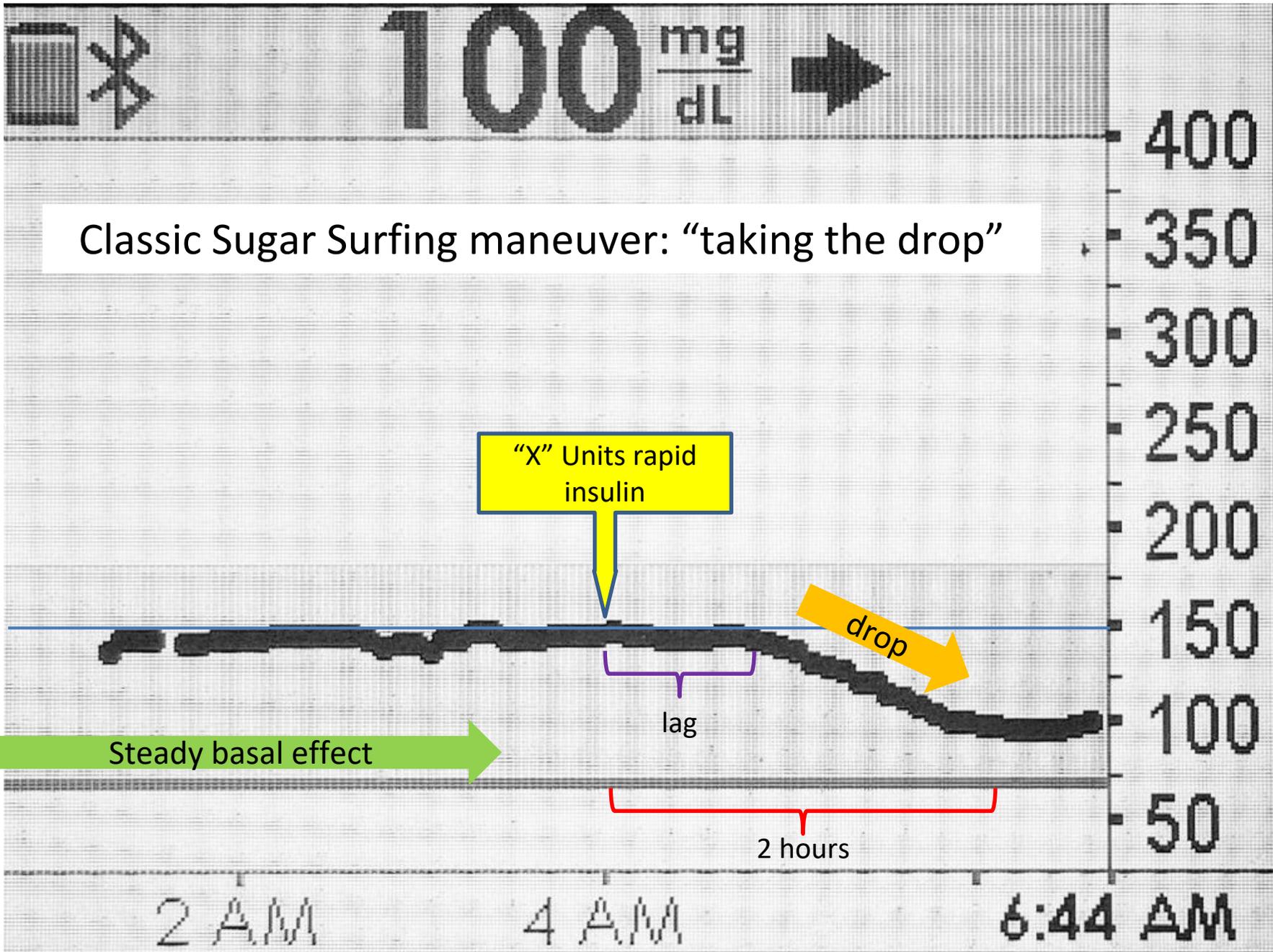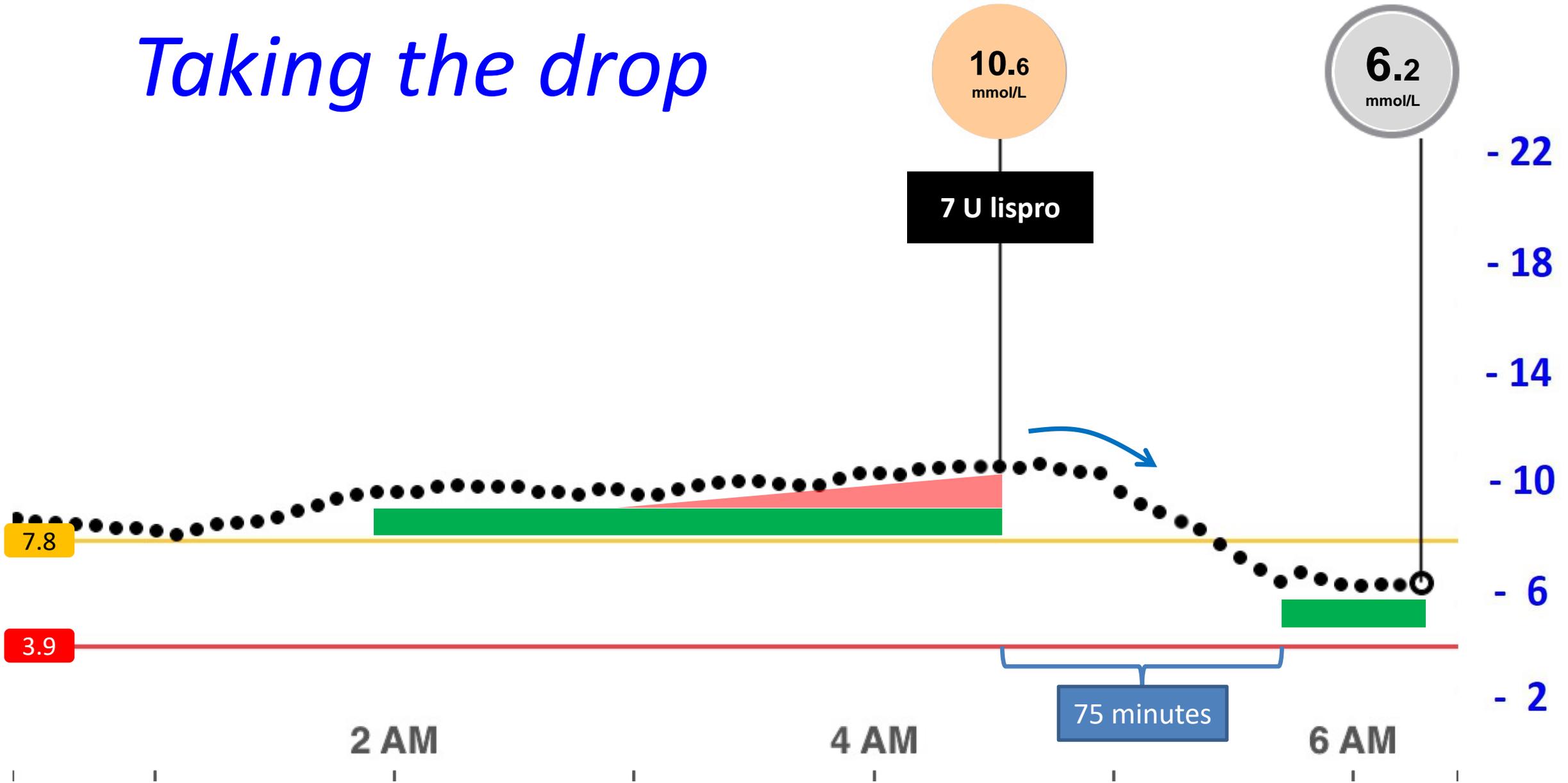
Then…as your *skills*/*confidence* grows…
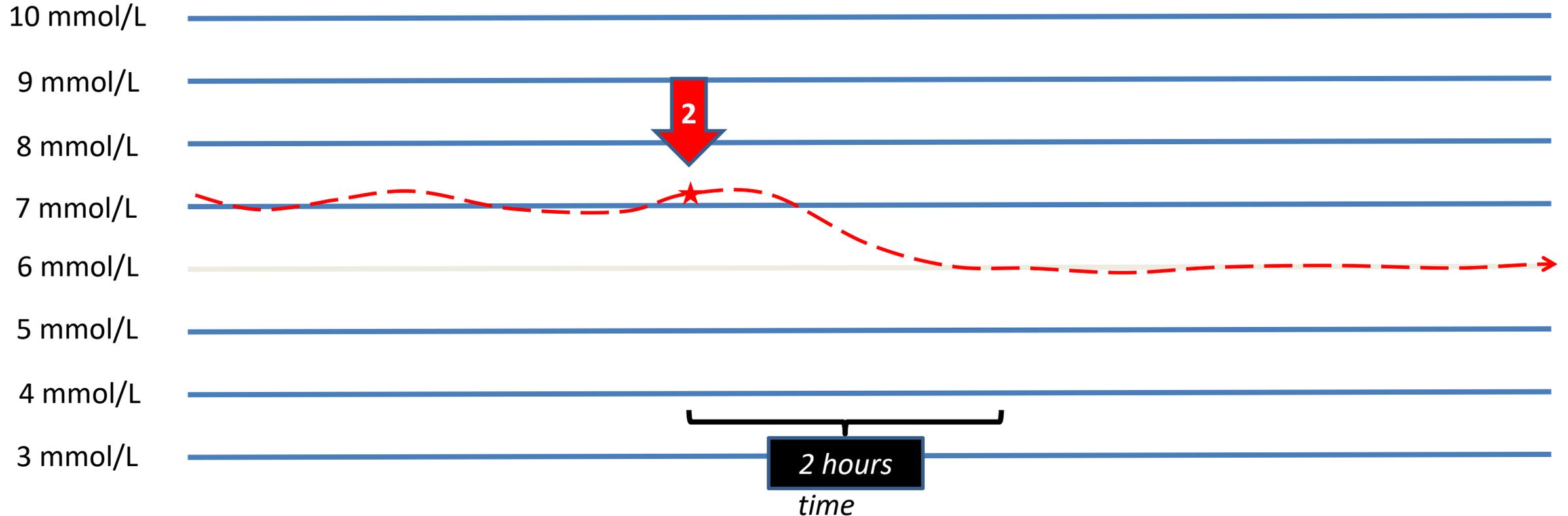
Set lower action thresholds and targets

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The heart of ultra tight blood sugar control: The mini-pivot
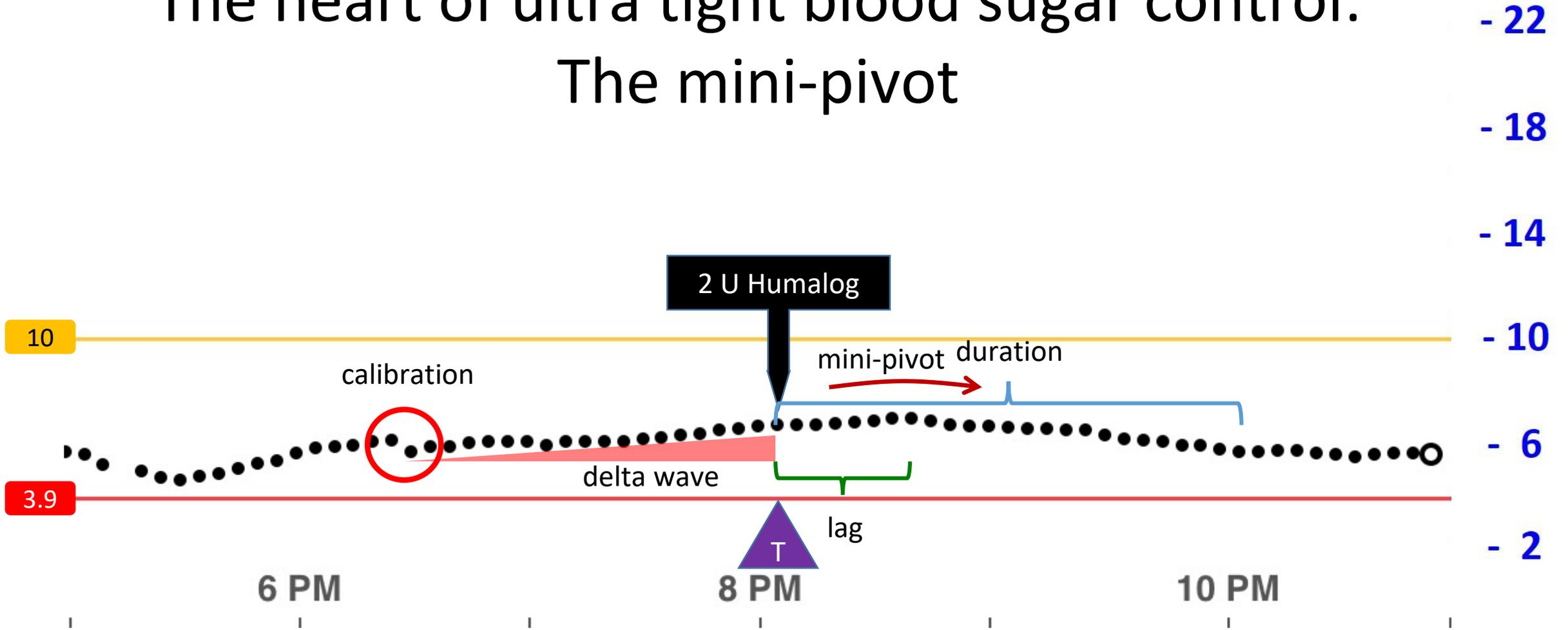
copyright © Sugar Surfing™ 2015-2016
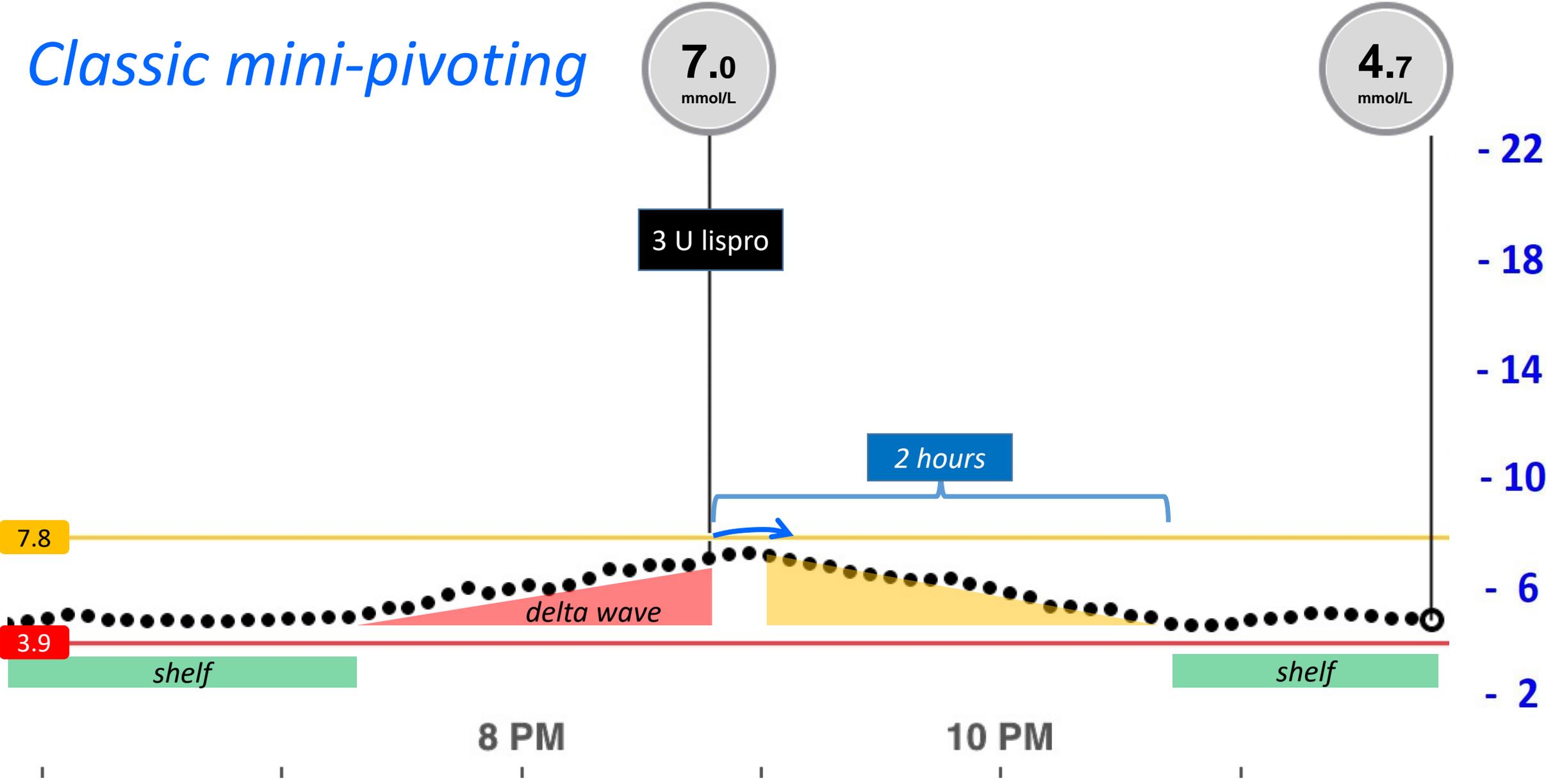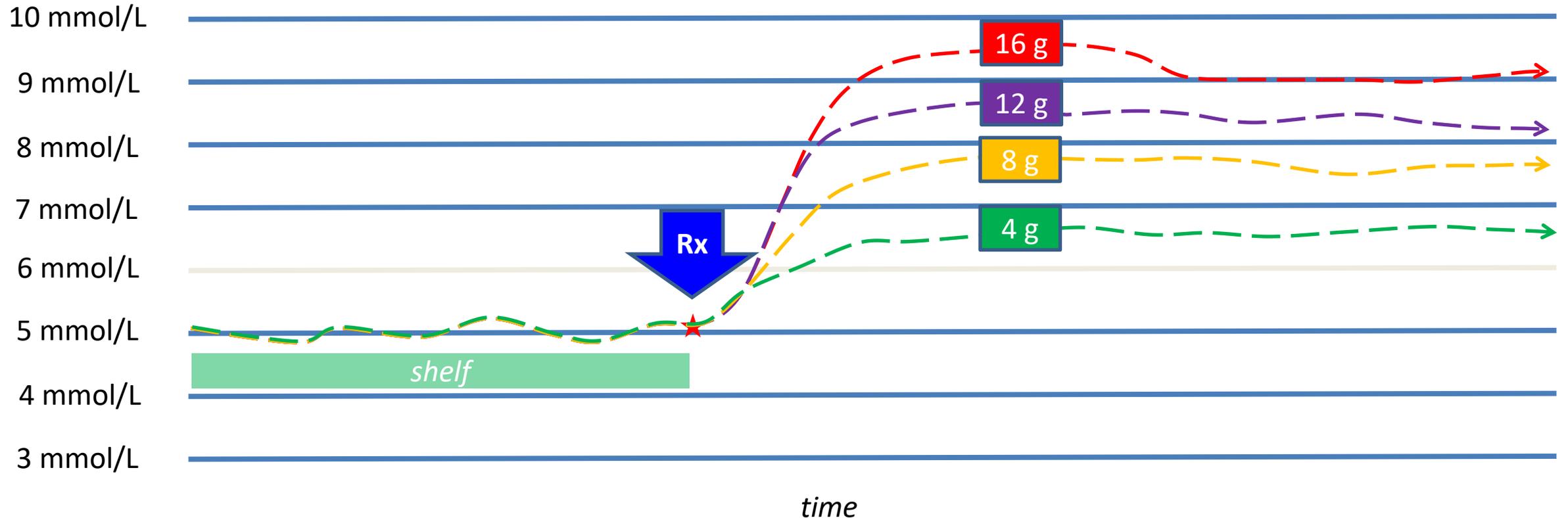
Microcarbing (aka "nudge")
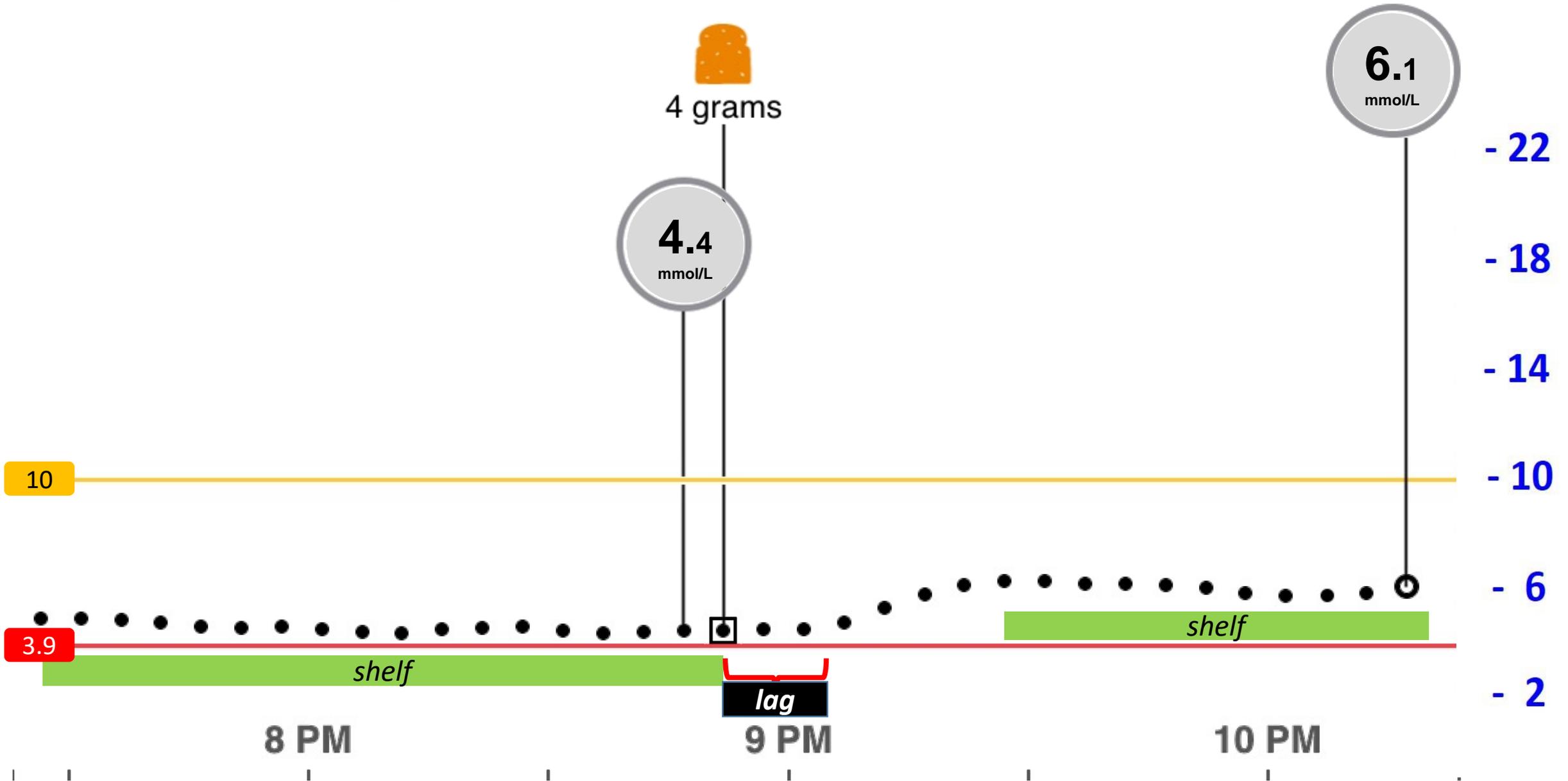
Waiting for the bend and meal timing depends on BG trend
And it also depends on the food (fast, medium or slow)

5.6 mmol/L

upward

Maximal wait

5.6 mmol/L

steady

Moderate wait

5.6 mmol/L

downward

Minimal wait

time

Timing insulin

Example

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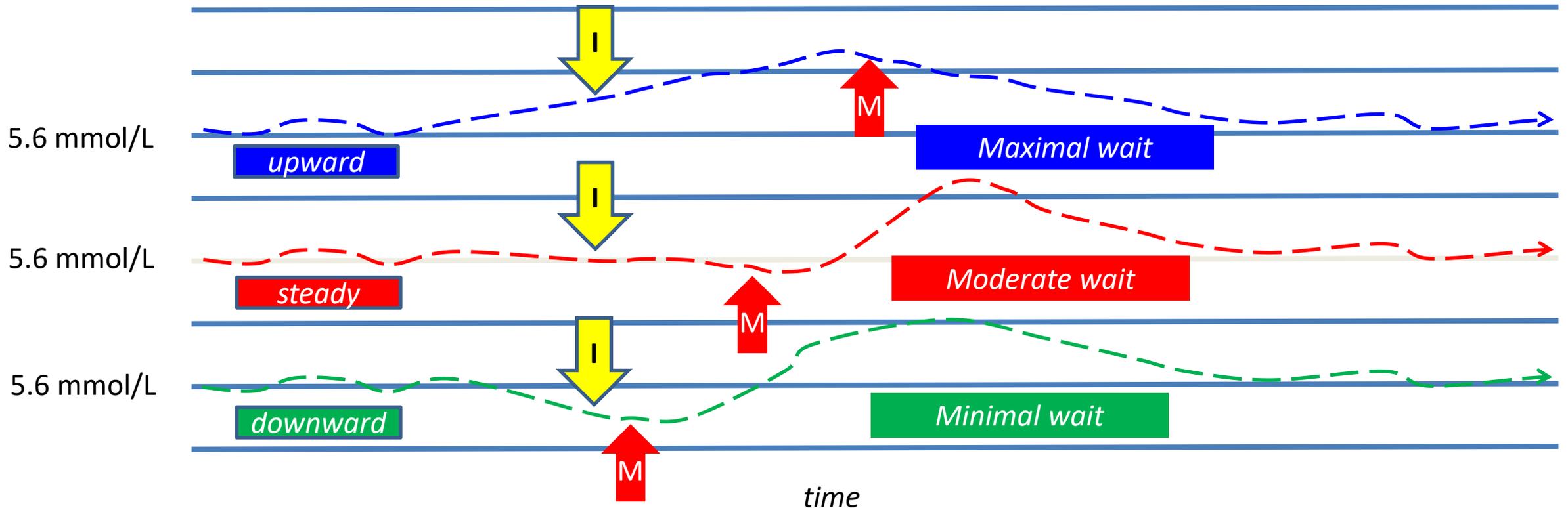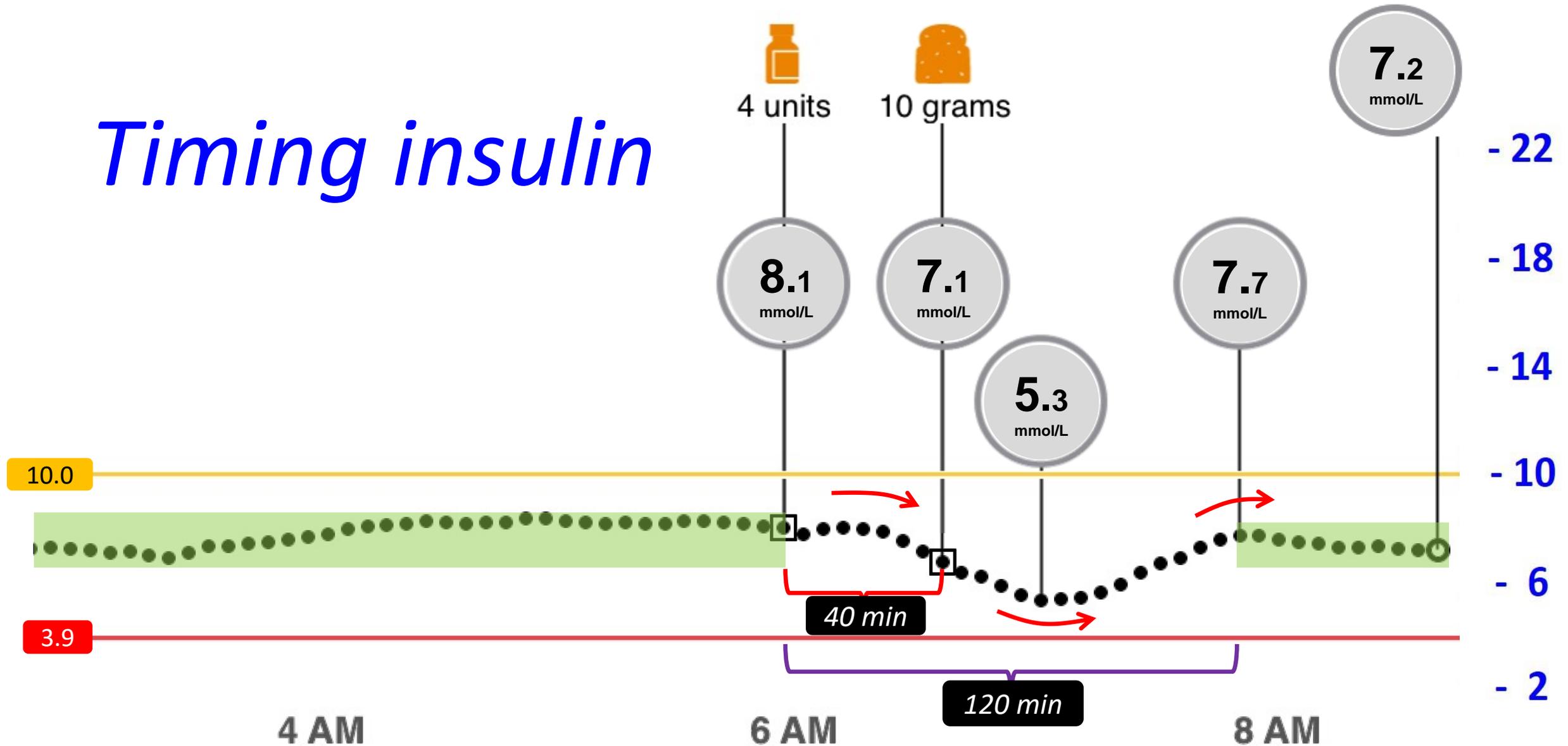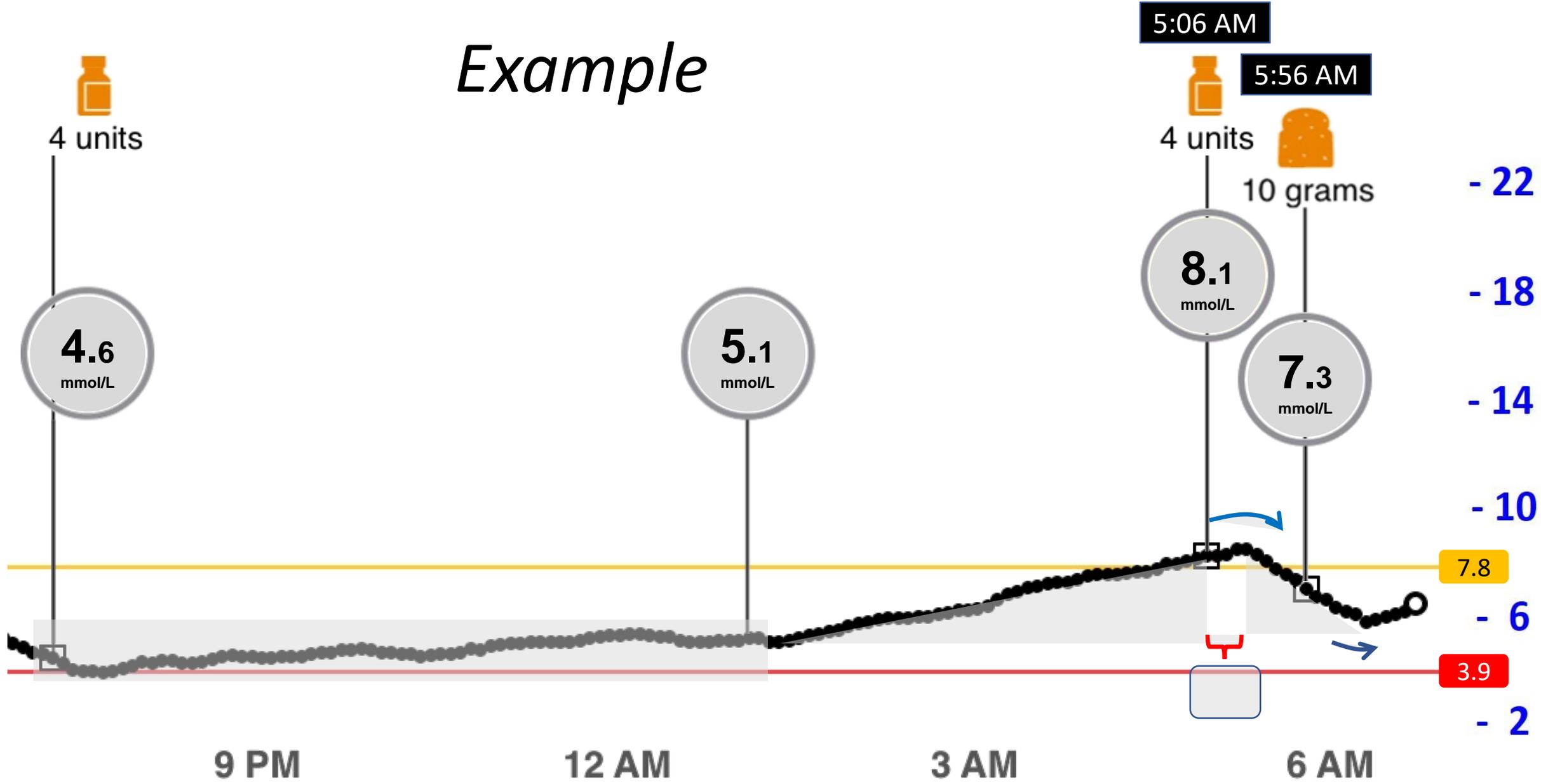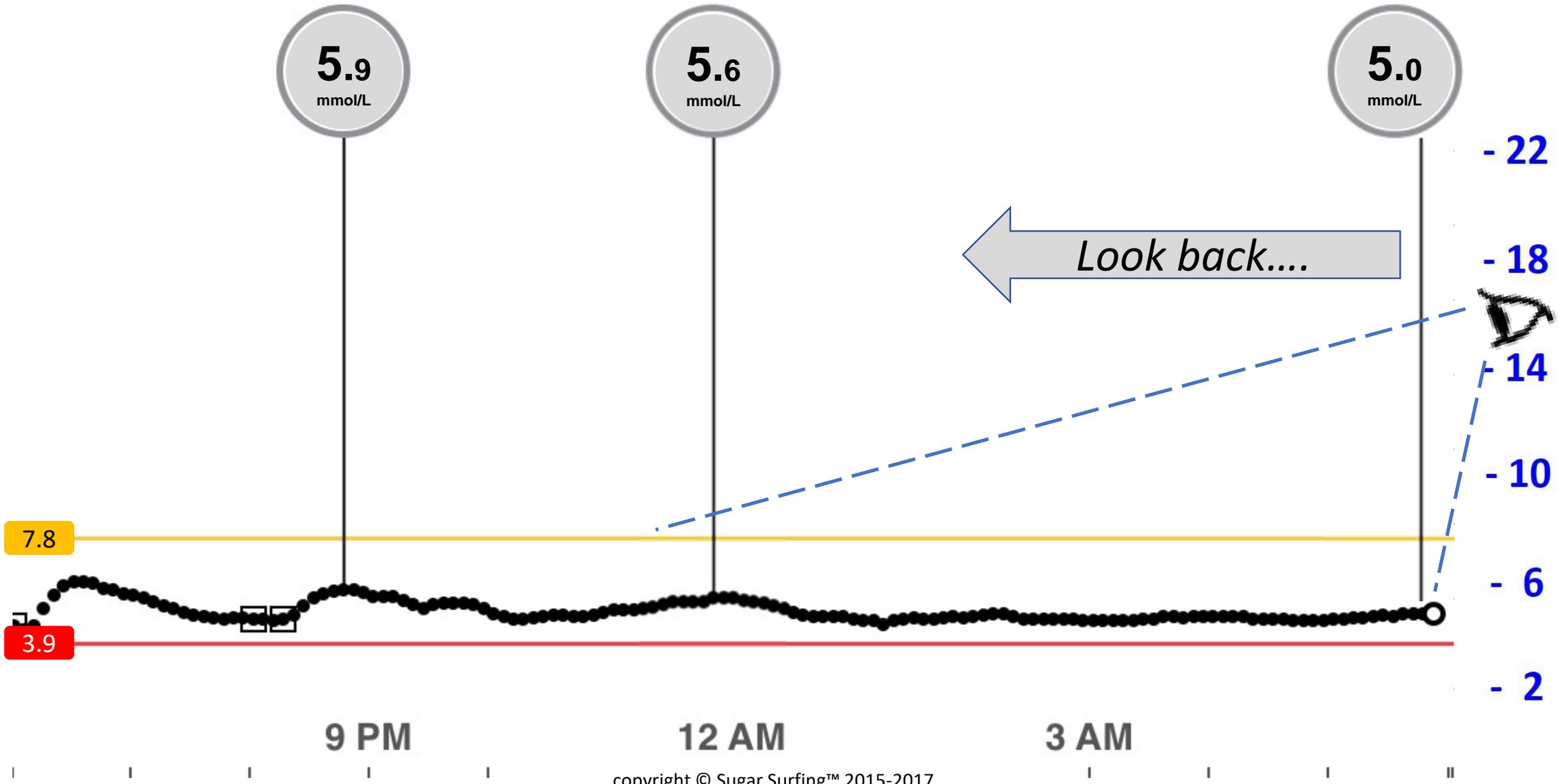
What a basal insulin is *supposed* to facilitate

BALANCE: Incoming blood sugar (influx)

Blood sugar trend line

Blood sugar trend line
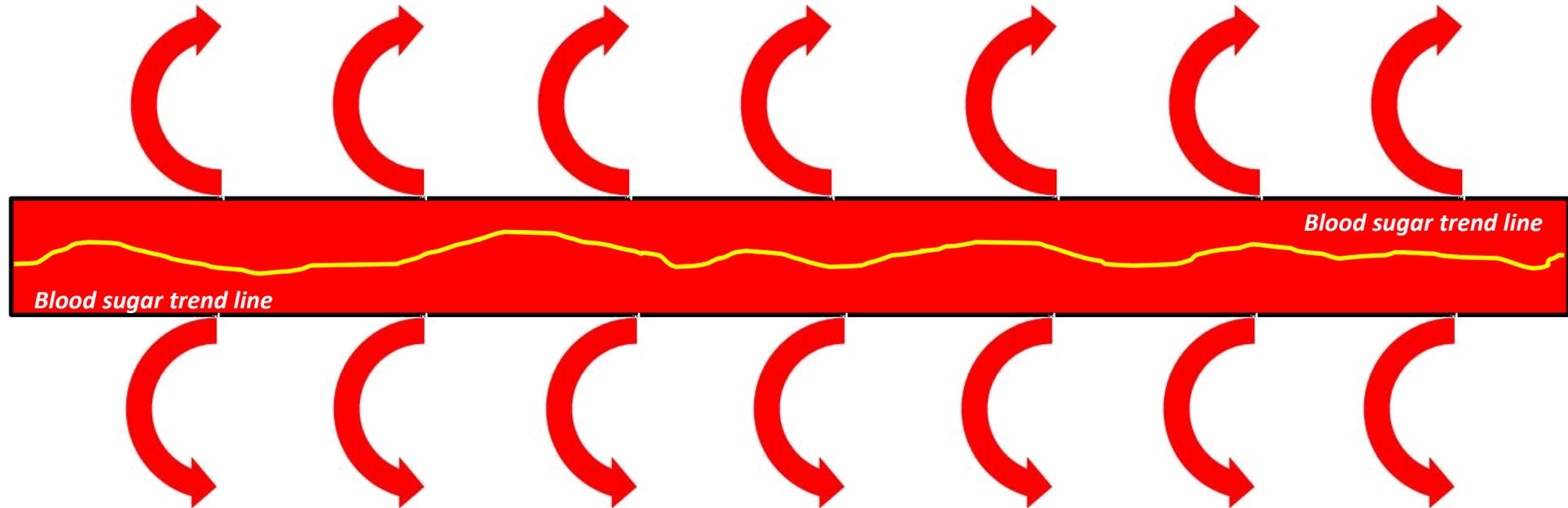
WITH: Outgoing blood sugar (efflux)

BASAL INSULIN AIMES TO PROVIDE <u>STEADY TRENDING</u>, <u>NOT</u> TO CONSISTENTLY RAISE OR LOWER BG LEVELS.

Look back....

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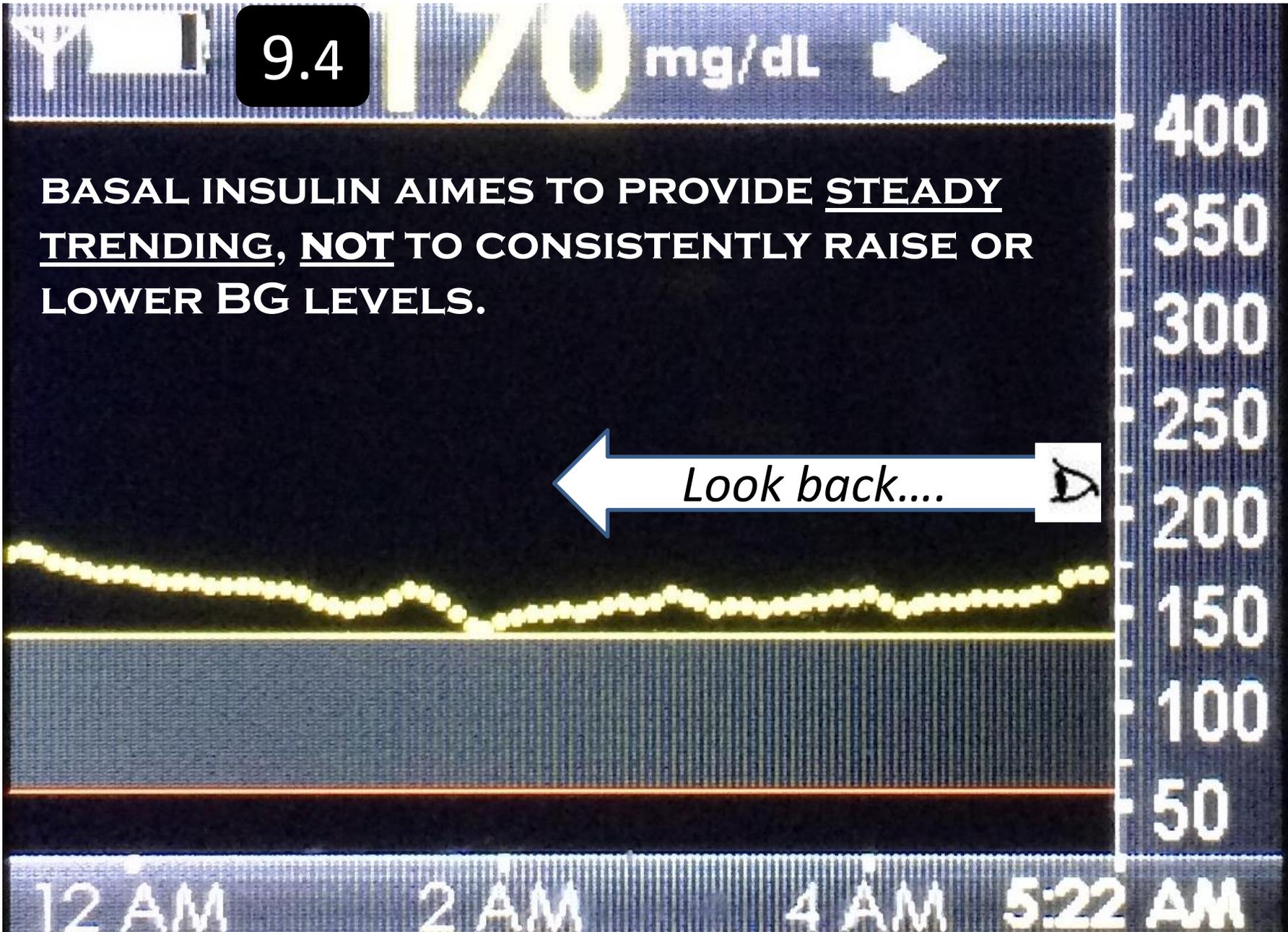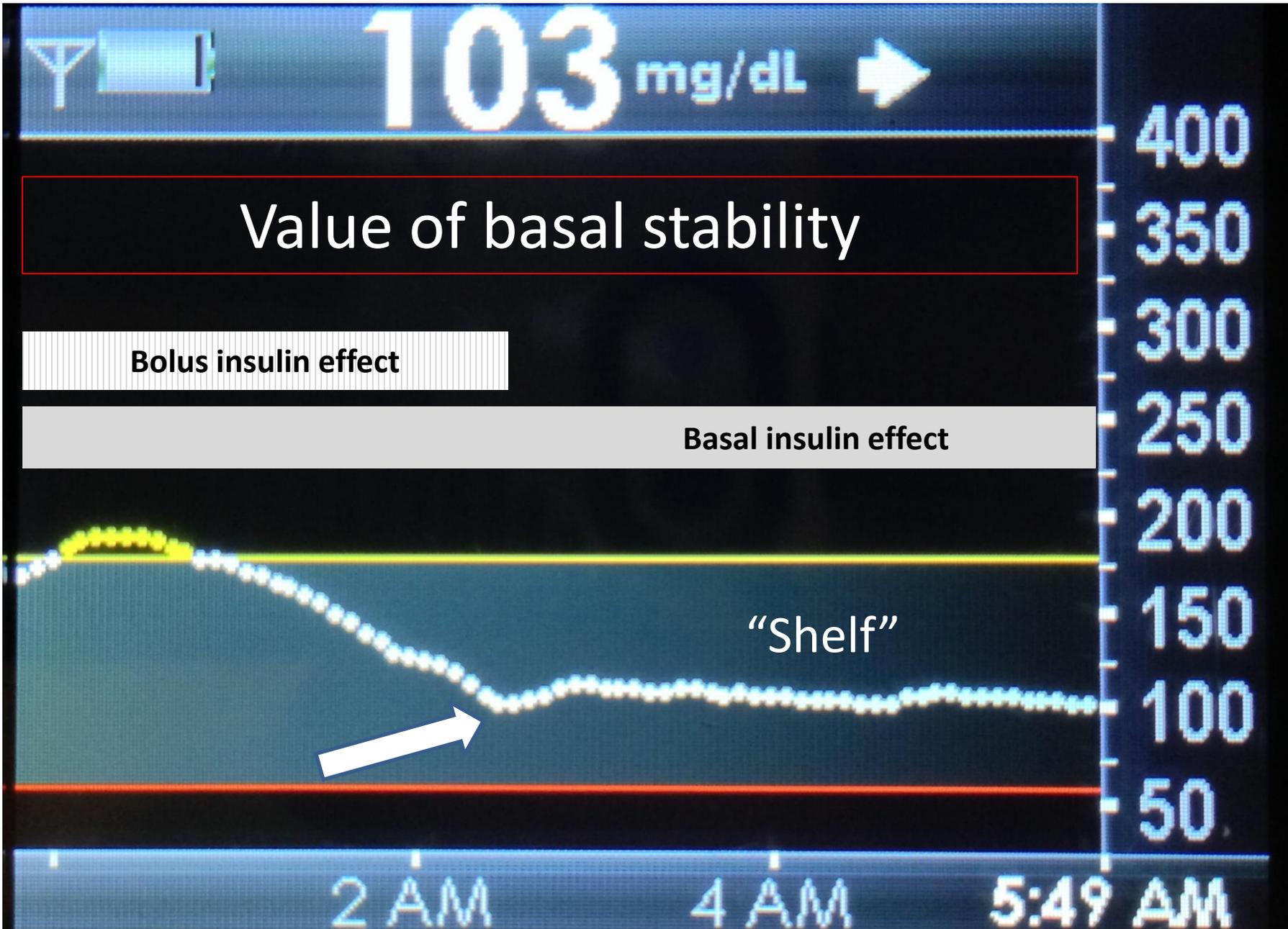
Dual receivers linked to same sensor
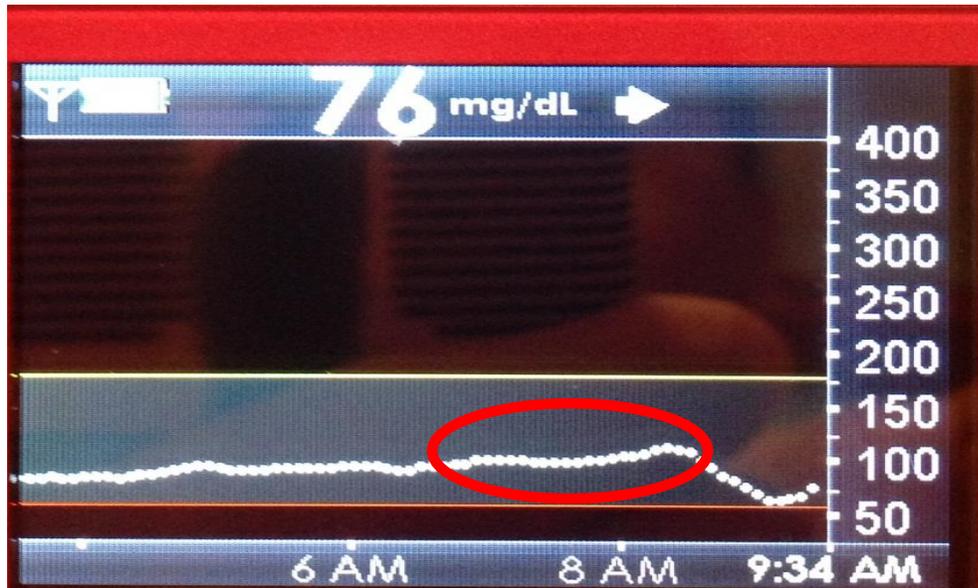
Calibration tips

1) Best done on a steady trend

2) Best done in preferred target range

3) The first 24 hours may be variable

4) An extra calibration on day 1 is ok

5) Calibration "on the bend"

6) Re-calibrate after large swings

7) It is possible to over-do it

8) Enter the BG as soon as it's collected

Sequential learning…

Use prior results to improve future outcomes
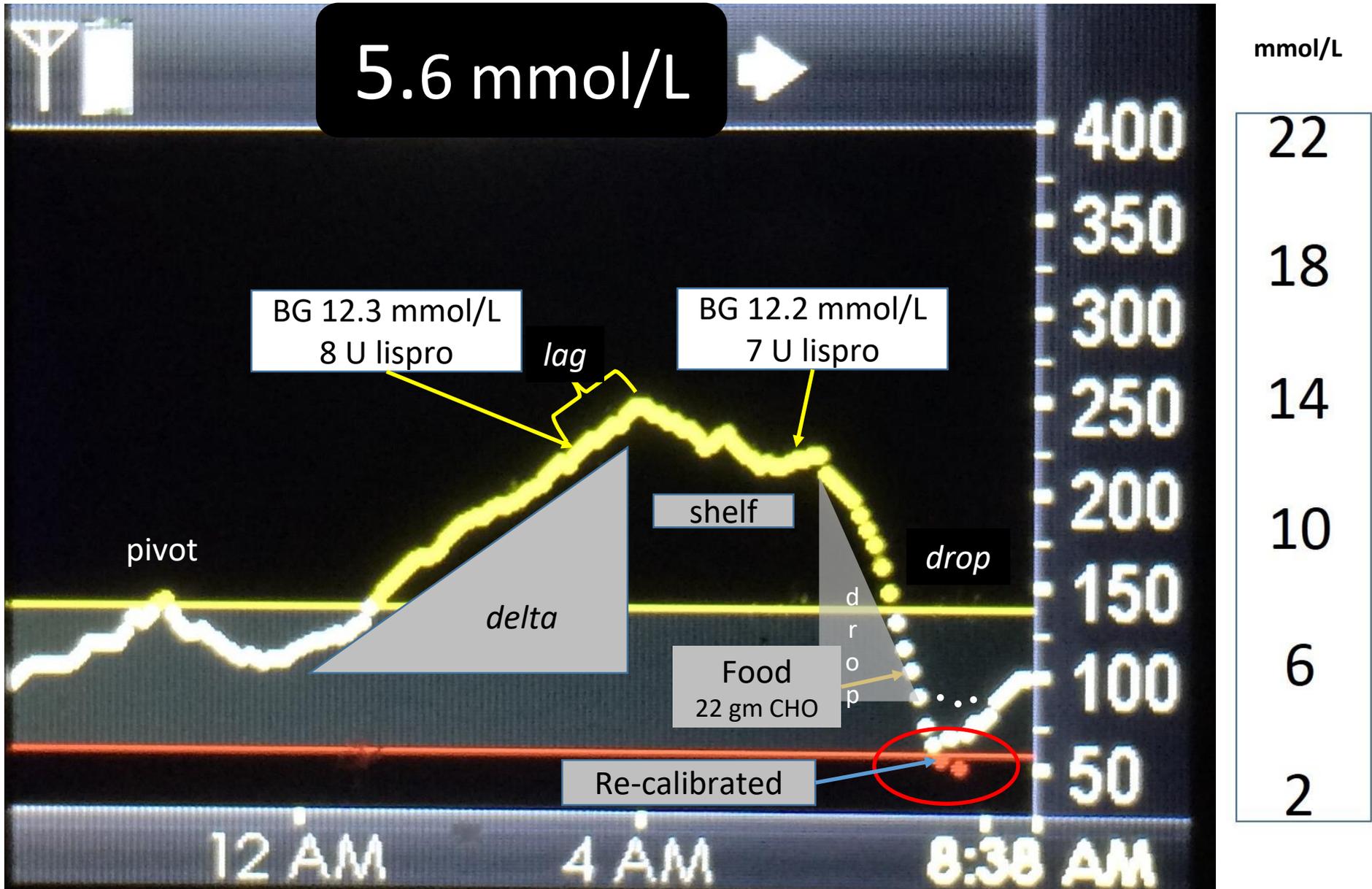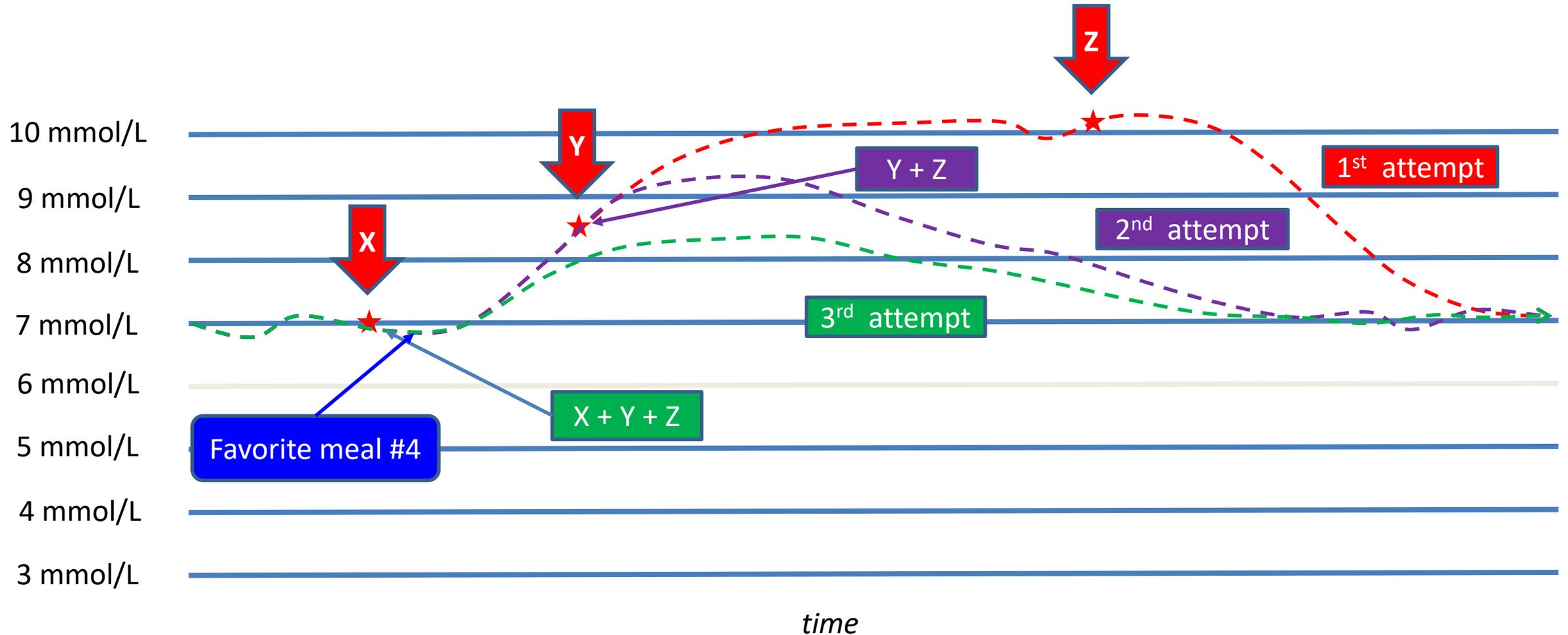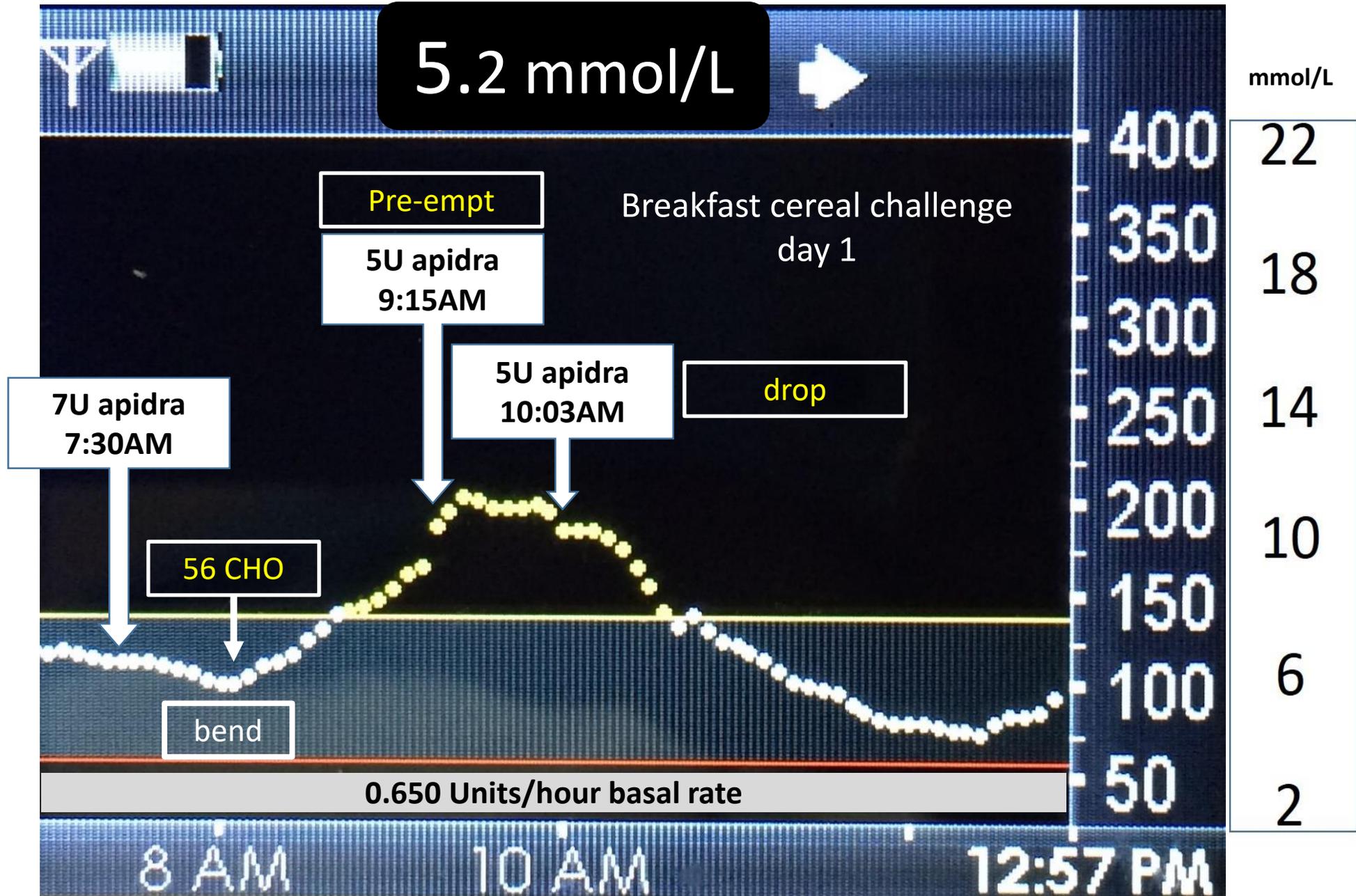
5.2 mmol/L
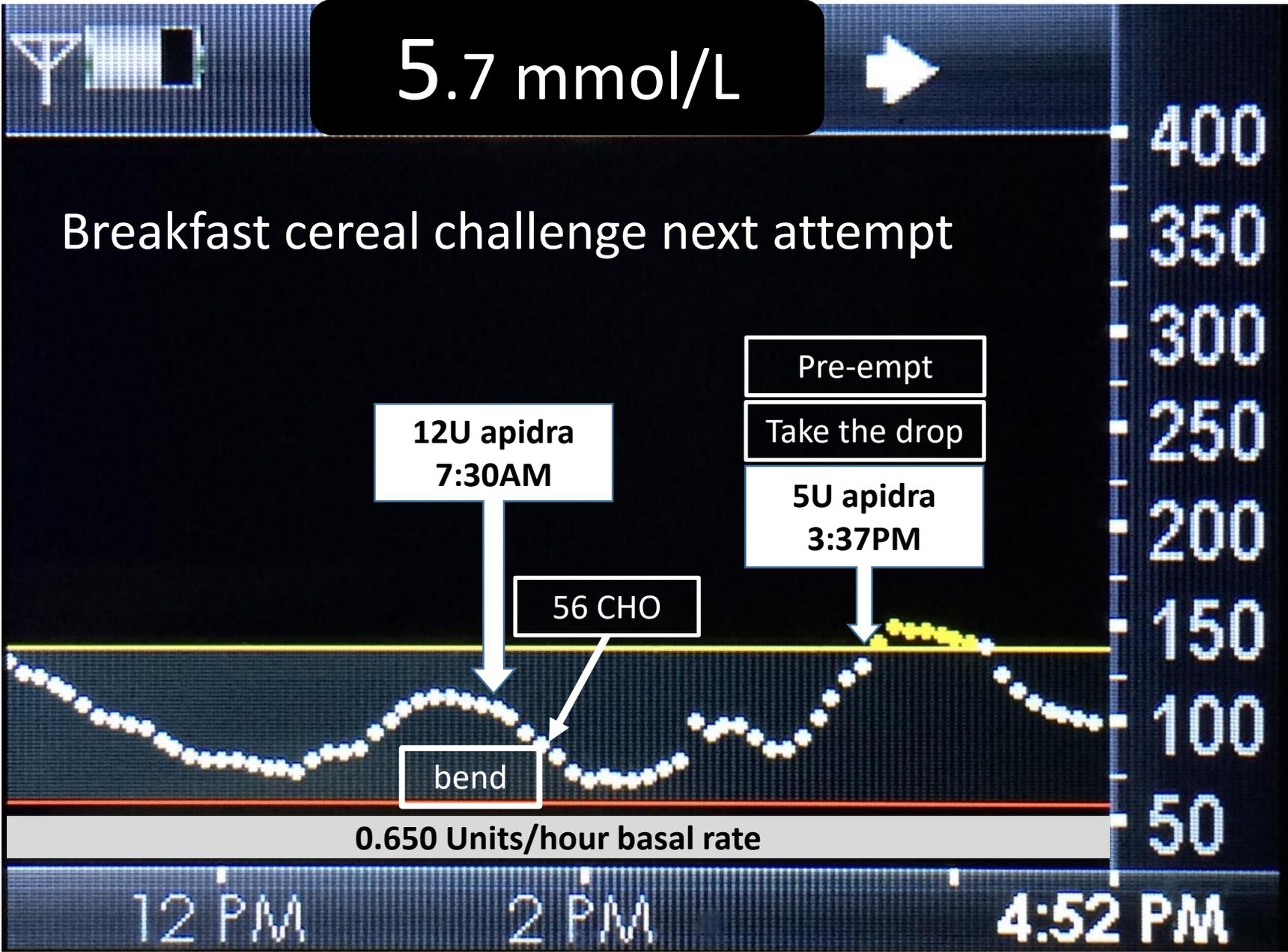
mmol/L
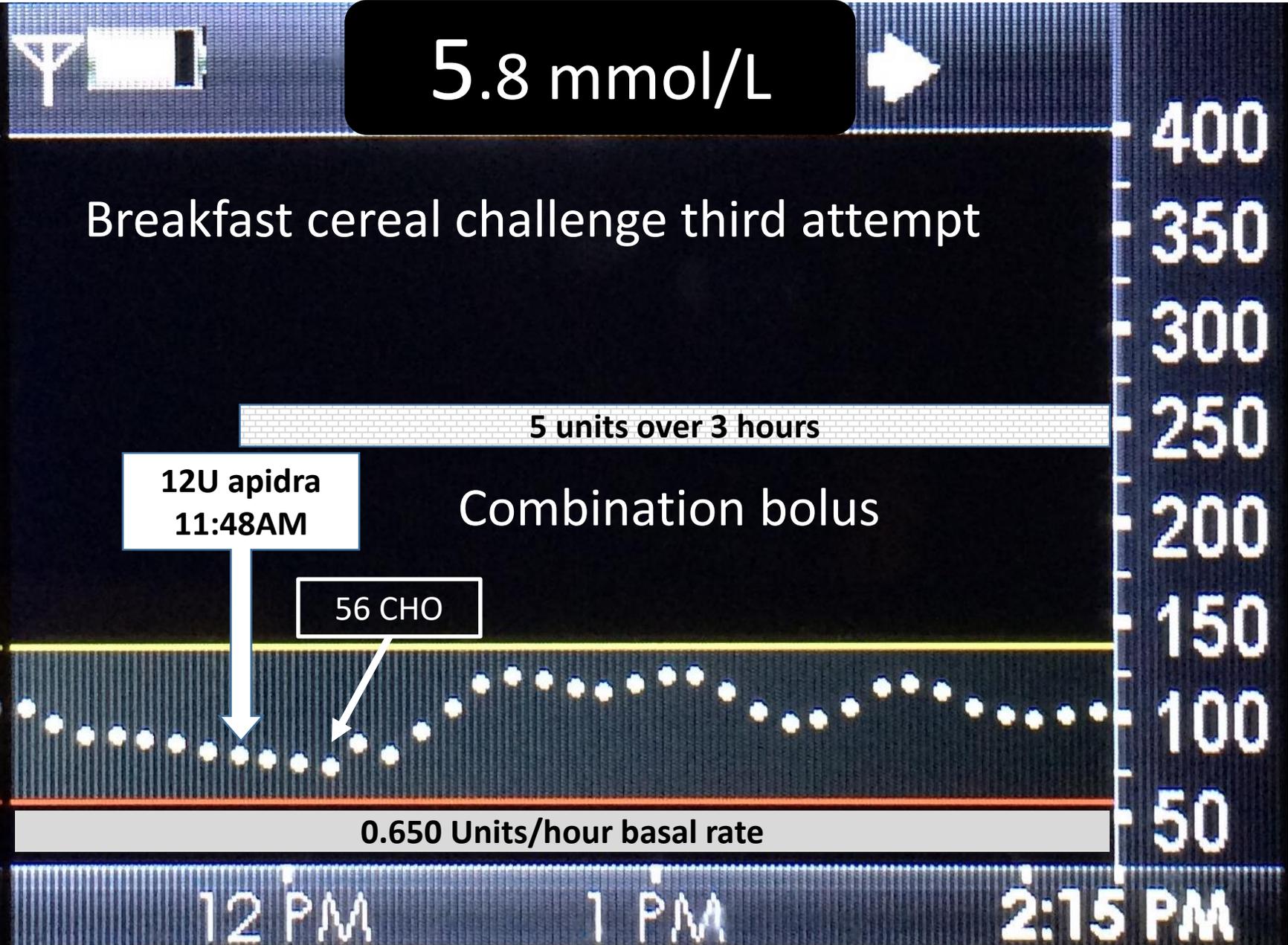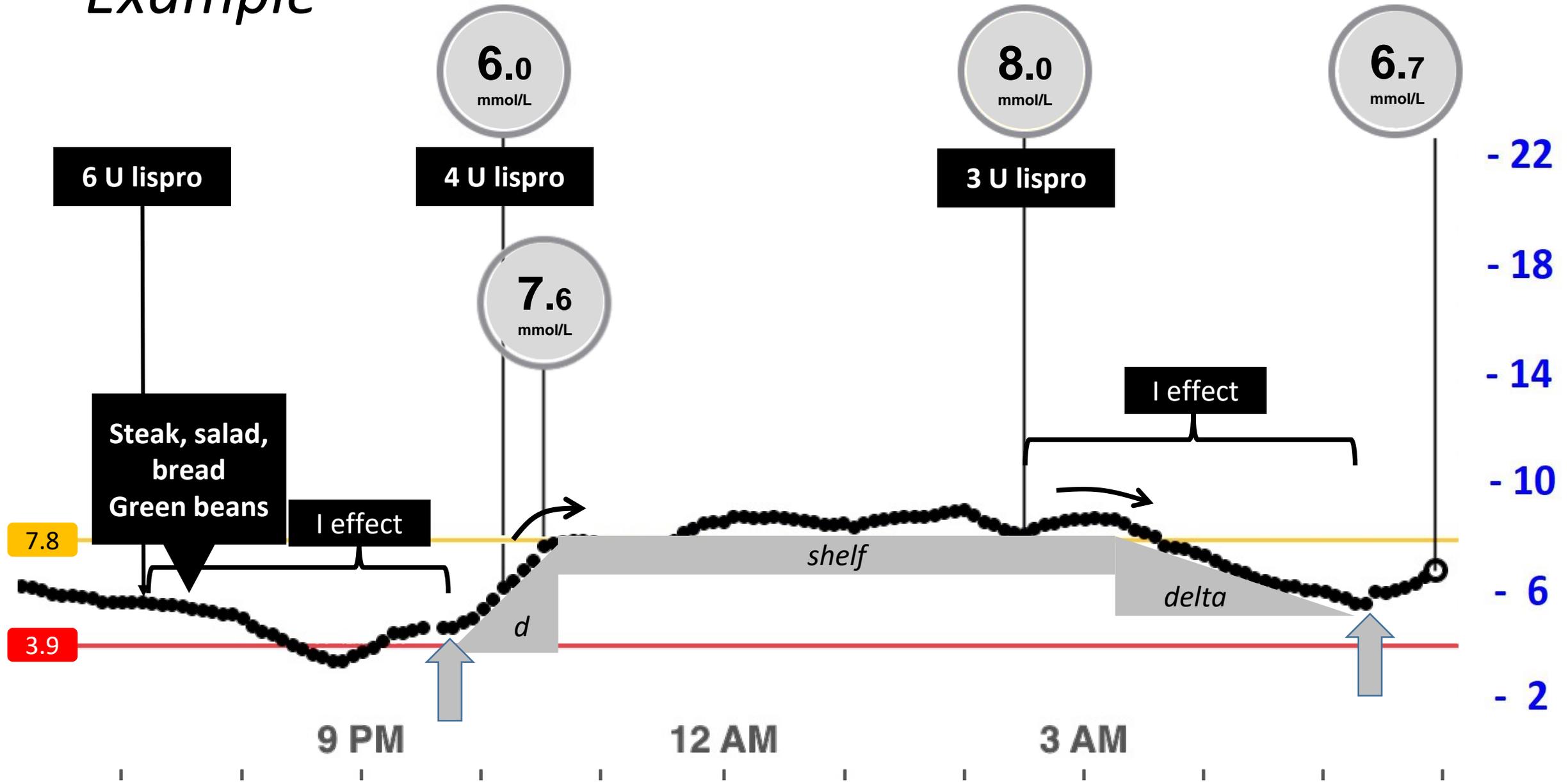
Pre-empt

Breakfast cereal challenge day 1

5U apidra
9:15AM

5U apidra
10:03AM

drop

7U apidra
7:30AM

56 CHO

bend

0.650 Units/hour basal rate

400
350
300
250
200
150
100
50

22
18
14
10
6
2

8 AM   10 AM   12:57 PM

Example

6 U lispro

Steak, salad, bread Green beans

I effect

6.0 mmol/L

4 U lispro

7.6 mmol/L

I effect

8.0 mmol/L

3 U lispro

I effect

6.7 mmol/L

7.8

3.9

shelf

d

delta

9 PM

12 AM

3 AM

- 22

- 18

- 14

- 10

- 6

- 2
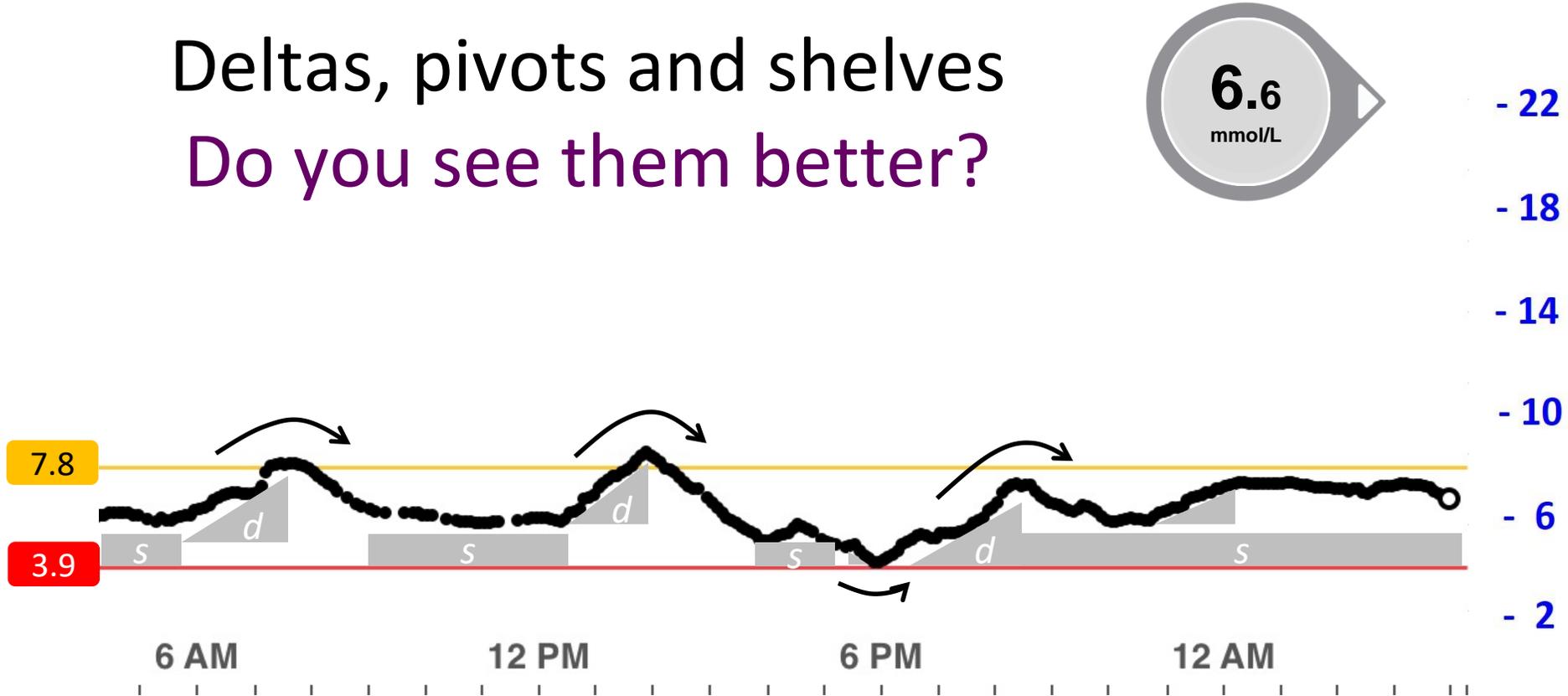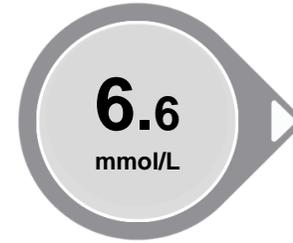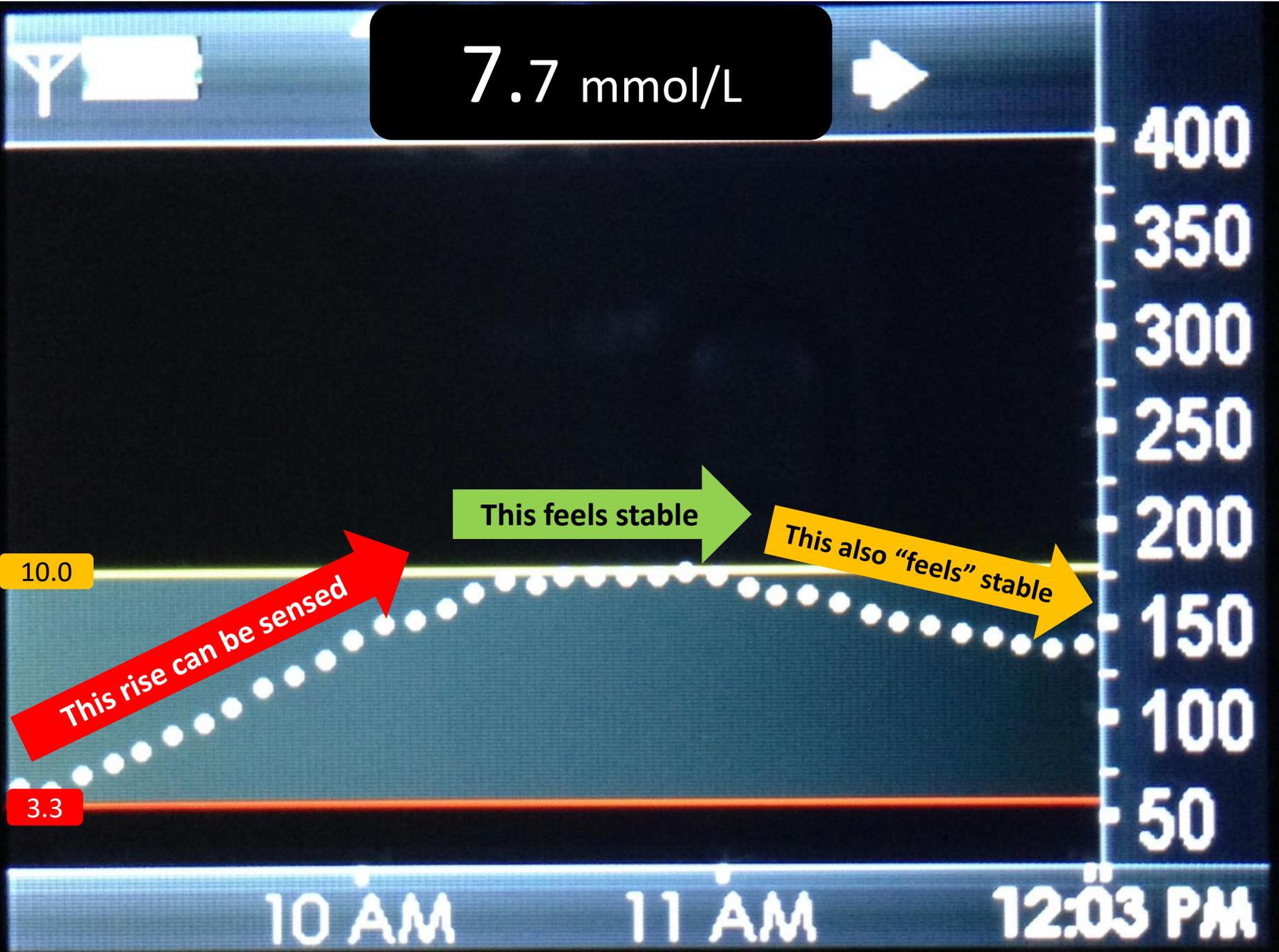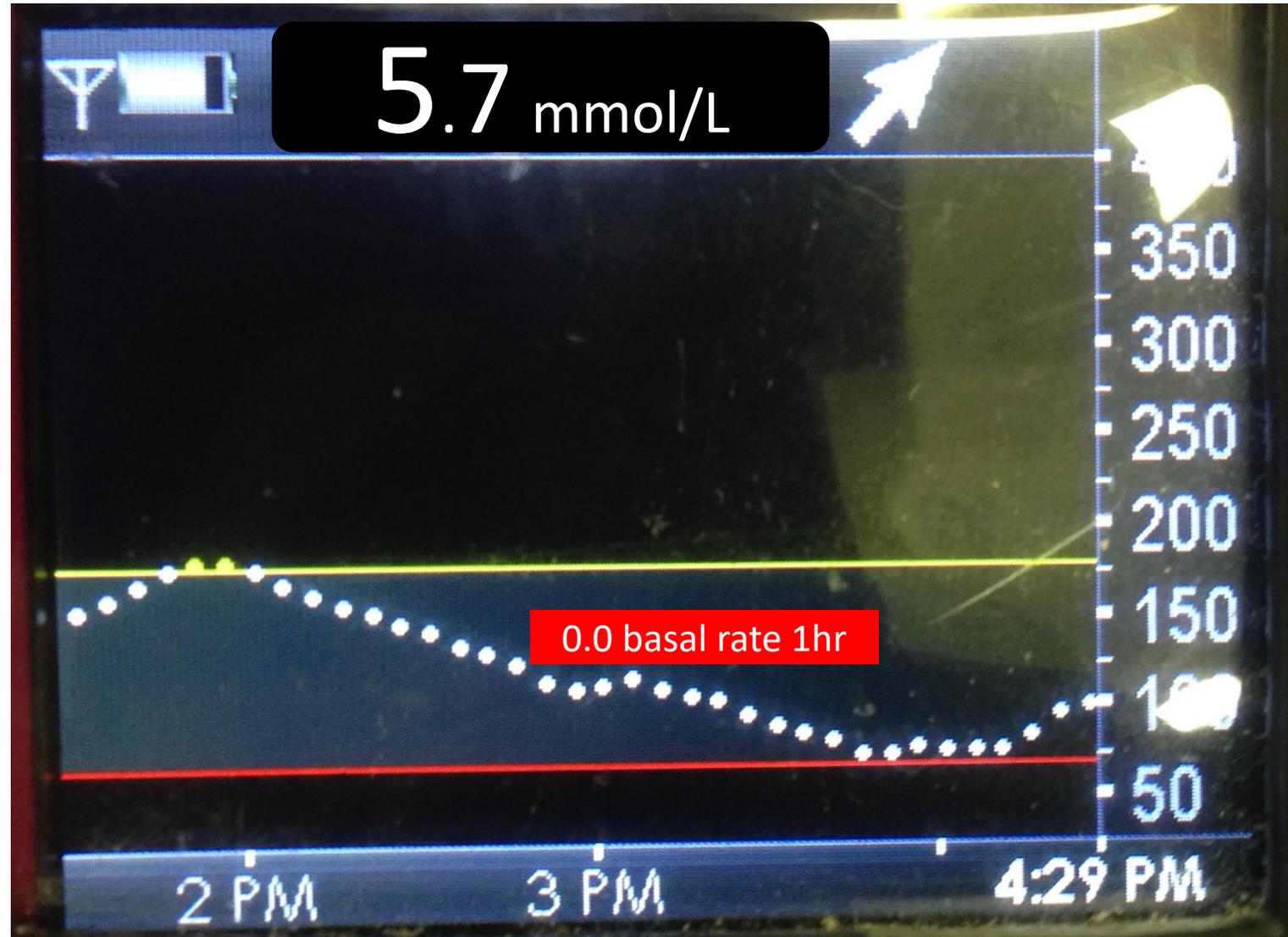
Engine brake
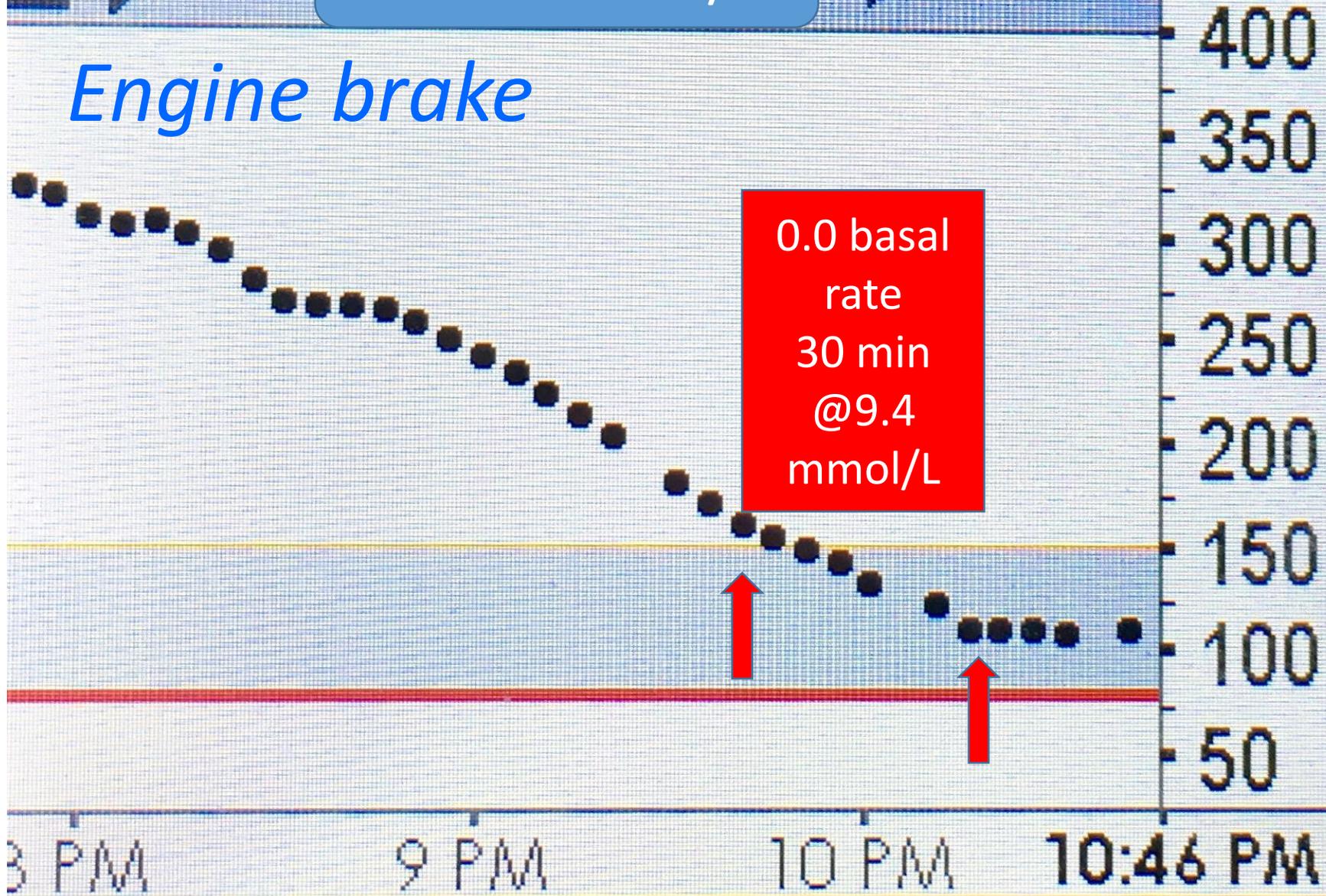
"stacking insulin" is wrong

Stacking Insulin vs. Use of I-Chains

Insulin stackers

- Are often unaware they stack

- Don't follow up on their actions

- Lack of interest, data, or access to BG checking supplies/tech

- Dosing multiple doses of rapid-acting insulin is overly aggressive and irresponsible

I-Chainers

- Proactively overlap insulin doses

- Always follow-up on actions to shape BG results

- Well-calibrated CGM makes this practical to "chain dependent events"

- Are empowered and engaged patients
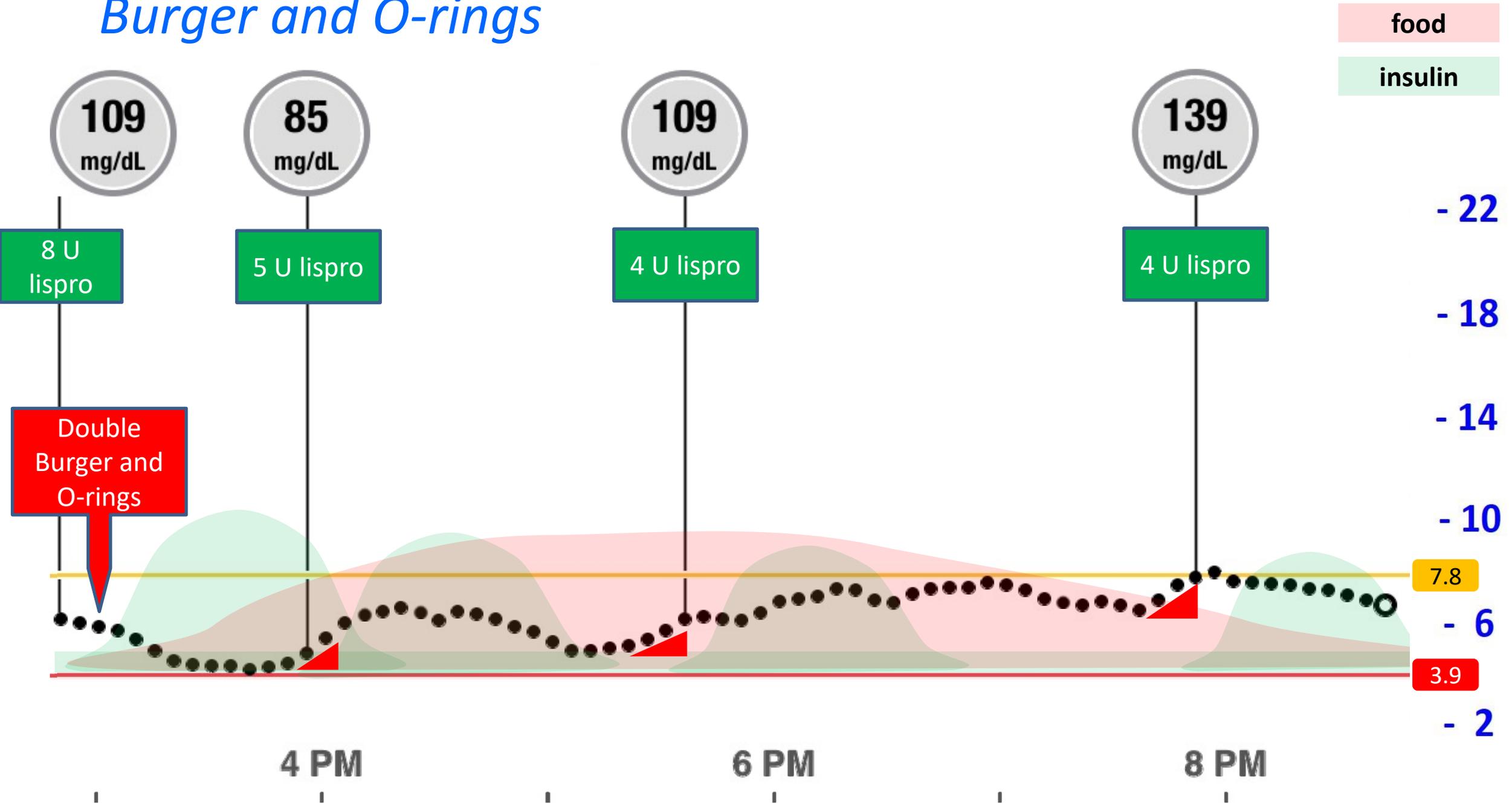
UNSAFE!

SAFE!

Burger and O-rings

food

insulin

109 mg/dL

85 mg/dL

109 mg/dL

139 mg/dL

8 U lispro

5 U lispro

4 U lispro

4 U lispro

Double Burger and O-rings

- 22

- 18

- 14

- 10

7.8

- 6

3.9

- 2

4 PM

6 PM

8 PM

S.U.R.F.

See the patterns

Understand their Significance

Respond appropriately

Follow up carefully

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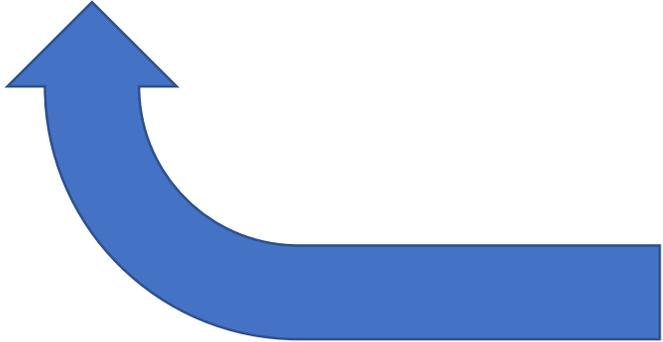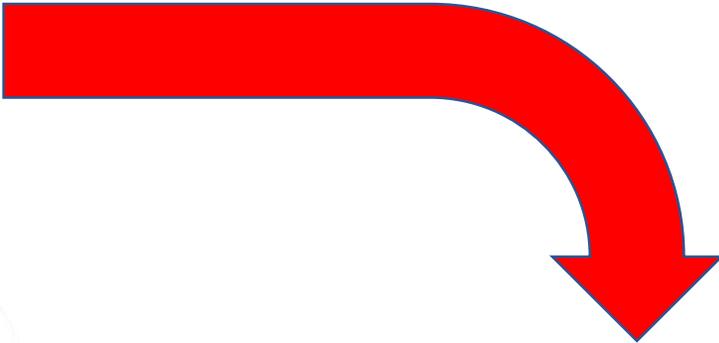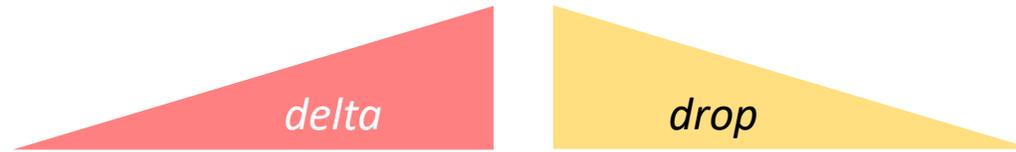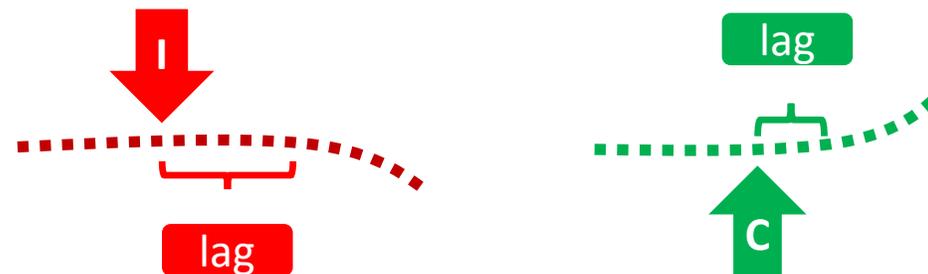
Determining significance: take *C.A.R.E.*

*C*urrent (what are you doing now)

*A*nticipated (actions/omissions)

*R*ecent (actions/omissions)

*E*xperience (your own)

Conceptual framework for *Sugar Surfing™*

Actions

Actions

⇧

⇧

REACTIVE

PROACTIVE

"IN CONTROL"

⇩

⇩

Omissions

Omissions

'recent' past

present

'immediate' future
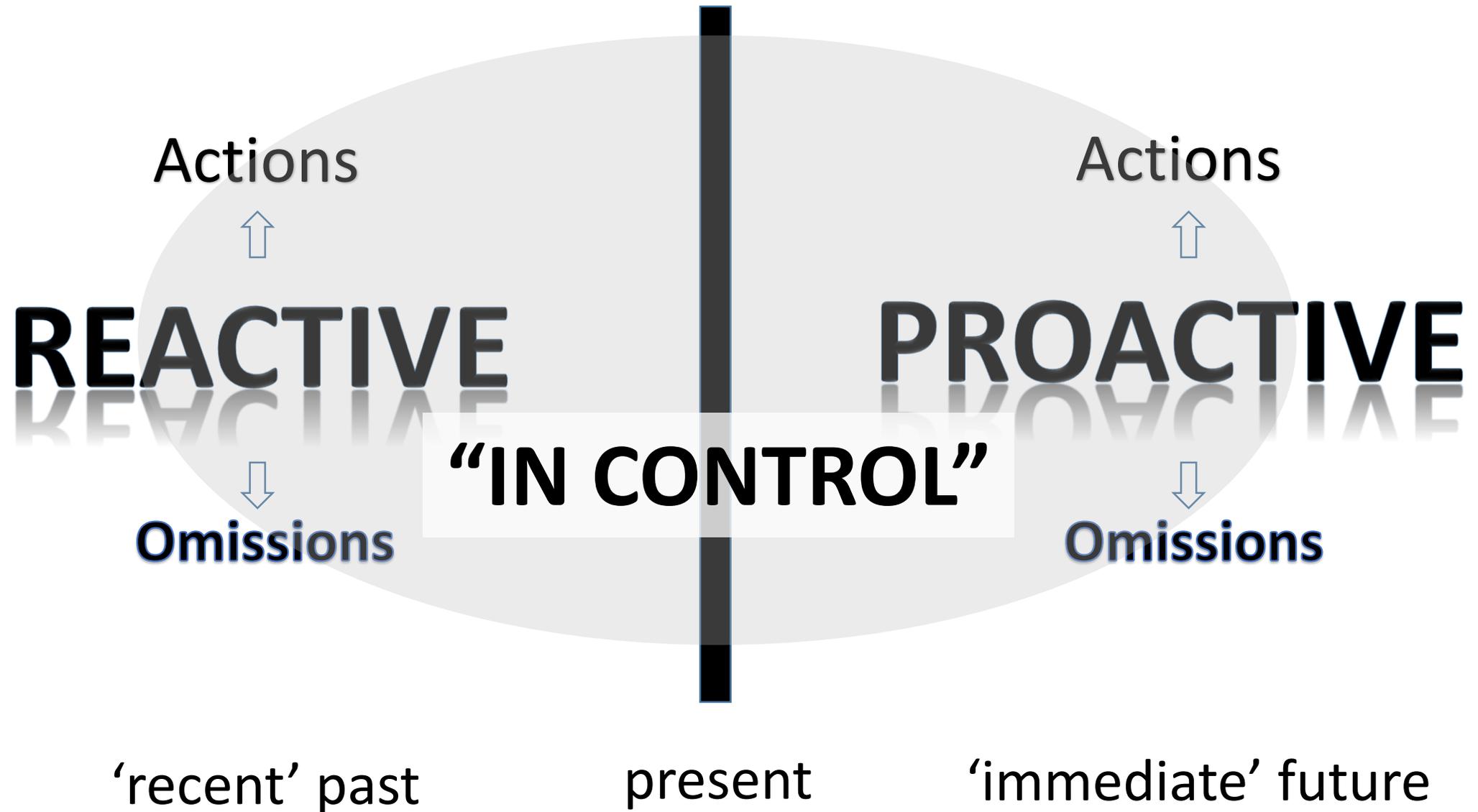
1HR   3HR   6HR   12HR   **24HR**

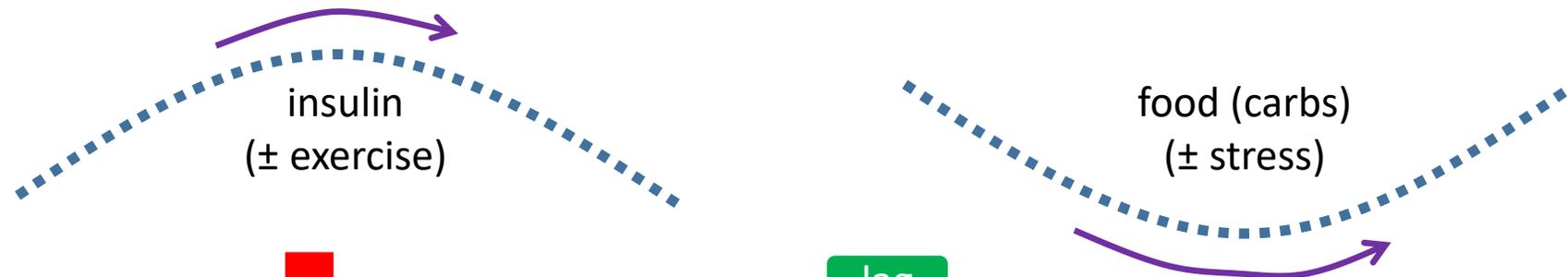*Dynamic Diabetes Management =* Glances + Omissions + Actions

- 22
- 18
- 14
- 10

7.8

- 6

3.6

- 2

12 AM   6 AM   12 PM

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Sugar Surfing in the UK

300+   # of attendees 2 years ago at Imperial College London

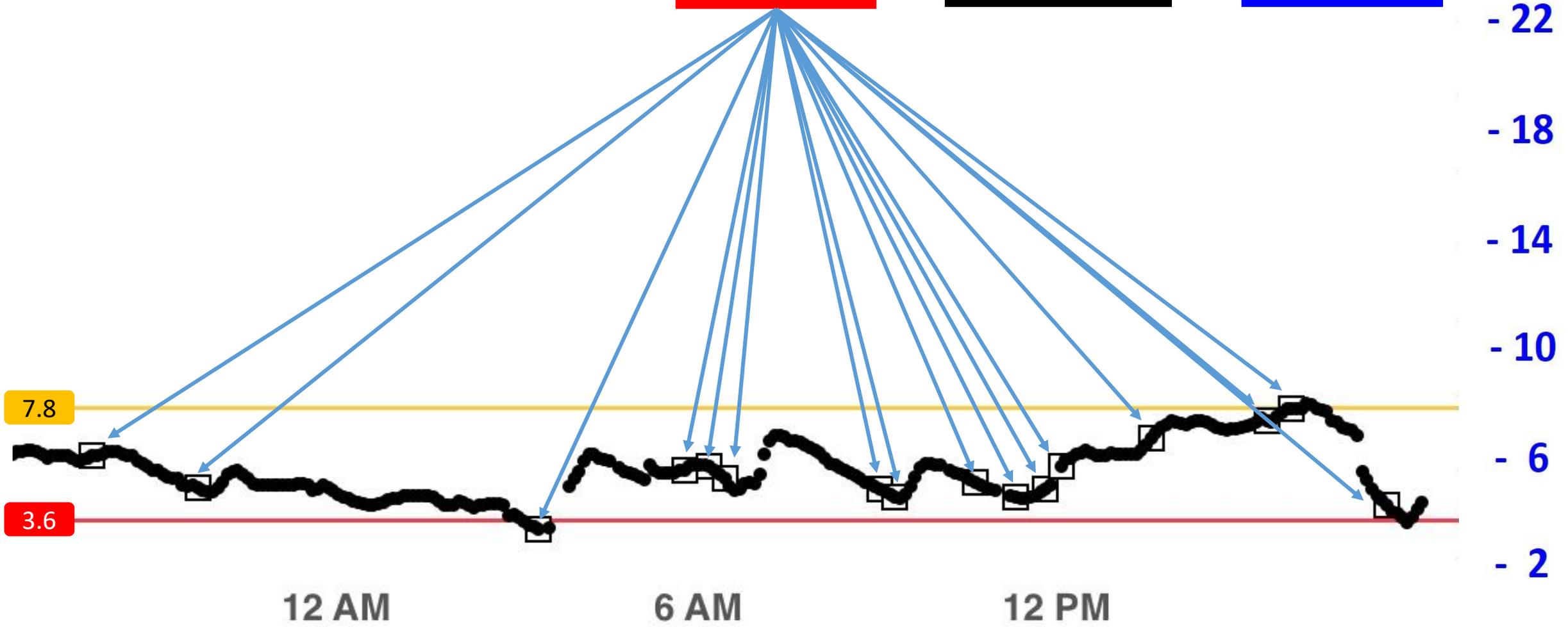**2X**   Interest from the UK has doubled since January 2017

15%   Of Sugar Surfing web traffic originates from the UK

2,000   Estimated number of Sugar Surfers living in the UK

Thank you!

SugarSurfing.com

- *No cost diabetes education (workshops, posts, videos, and conversation)*
- *Twitter: @SugarSurfing*
- *Facebook.com/SugarSurfing*

Book Sales Fund Programs

Inquiries by Email To:
admin@sugarsurfing.com

- Stephen W. Ponder MD FAAP CDE
- Kevin L. McMahon

Free eBook for Newly Diagnosed >90days