

# Diabetes and Hypertension Project ECHO\* Clinic

\*ECHO: Extension of Community Healthcare Outcomes

**Oct. 28, 2021**

## Before we begin:

- Rename your Zoom screen with your name and organization
- Claim CE: text 19185-18817 to 804-625-4041
  - Go to [vcuhealth.org/echodmhtn](https://vcuhealth.org/echodmhtn) for instructions on creating your account

*The Diabetes and Hypertension ECHO is made possible  
by funding through CDC Cooperative Agreement  
NU58DP006620-InnoVAte.*

# Zoom Reminders



## Diabetes & Hypertension Project Echo

- You are all on **mute**. Please **unmute** to talk.
- If joining by telephone audio only, press **\*6** to mute and unmute.
- Use the chat function to speak with our team or ask questions.

Unmute

Chat Box



Start Video



Invite



Participants



Share



Chat



Record

Leave Meeting

# ECHO is all teach, all learn

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Interactive



Co-management  
of cases



Peer-to-peer  
learning



Collaborative  
problem solving

## Helpful Reminders

- Please feel free to eat your lunch or step away briefly if needed
- We are recording and can share sessions upon request
  - Each session's slides are available on [www.vcuhealth.org/echodmhtn](http://www.vcuhealth.org/echodmhtn)
- Please **do not share any protected health information** in your discussion or the chat box
- Project ECHO operates on the “All Teach, All Learn” model
  - Feel free to ask questions in the chat or unmute to ask questions at designated times
  - We're all here to learn from each other and value each person's input and expertise!



# VCU Health Diabetes & Hypertension ECHO Clinics

## VCU Hub Team

Principal Investigator	Dave Dixon, PharmD
Administrative Medical Director ECHO Hub	Vimal Mishra, MD, MMCi
Clinical Experts	Niraj Kothari, MD Trang Le, MD
Project Coordinator/IT Support	Madeleine Wagner

- One-hour ECHO clinics on 2nd and 4th Thursdays
- Every ECHO clinic includes a didactic presentation followed by case discussions
- Website: [www.vcuhealth.org/echodmhtn](http://www.vcuhealth.org/echodmhtn)
  - Directions for claiming CE can be found here
  - You have up to six days after our session to claim CE by texting **19185-18817** to **804-625-4041**

# Disclosures

Trang Le, M.D., has no financial conflicts of interest to disclose.  
Niraj Kothari, M.D., has no financial conflicts of interest to disclose.  
Alex Stolberg, R.D., has no financial conflicts of interest to disclose.  
There is no commercial or in-kind support for this activity.

# CGM Interpretation

# Ojectives:

- Identify common regimen and self-management issues using CGM reports



freestyle.abbott



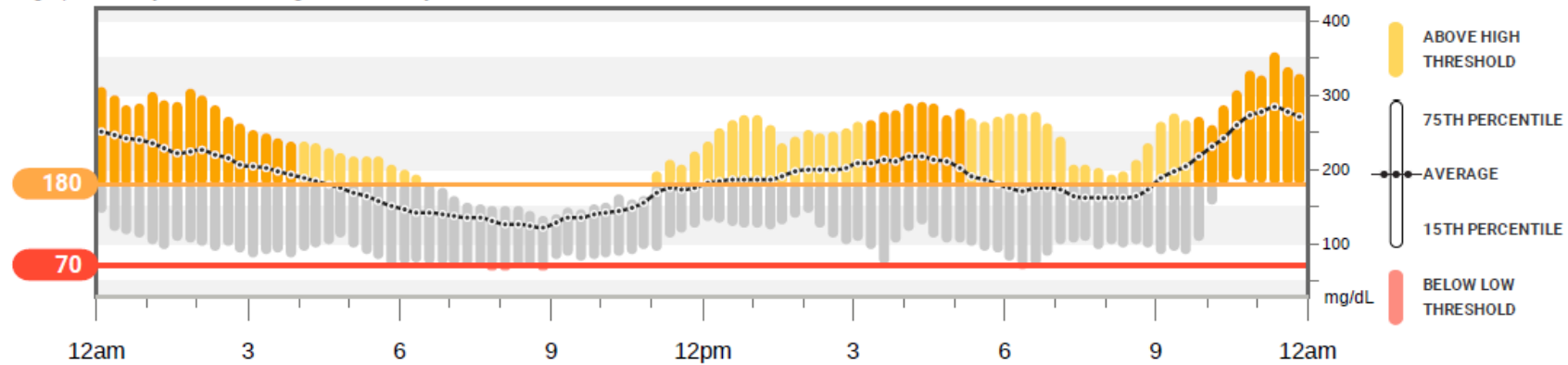
dexcom.com



# Too Much Basal

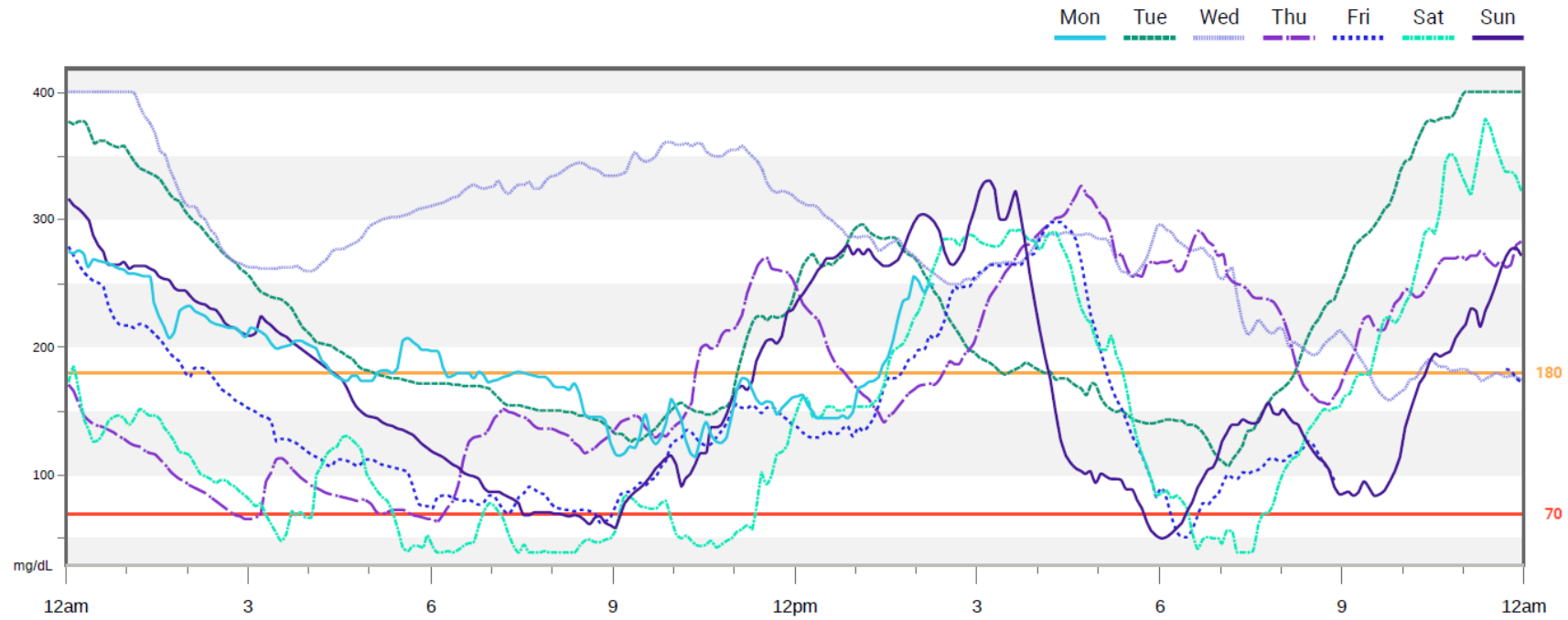
## *Example one*

This graph shows your data averaged over 14 days



# Too Much Basal

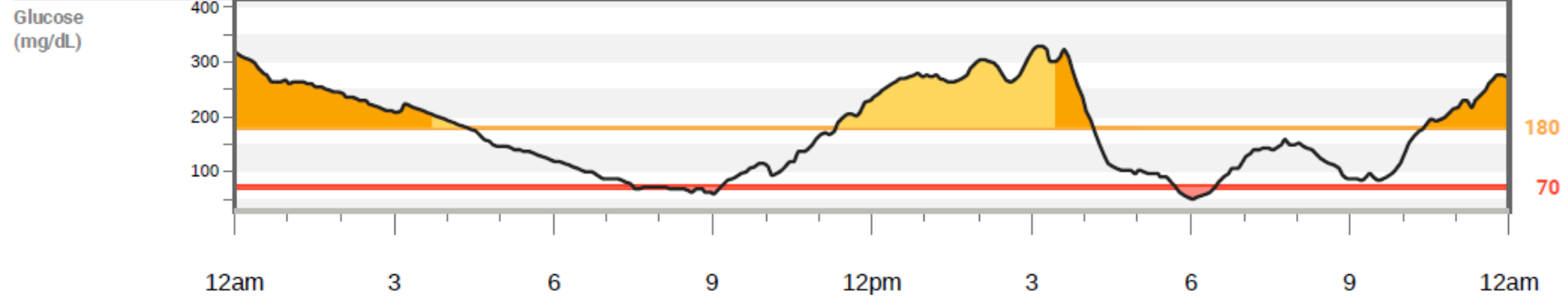
## *Example one*



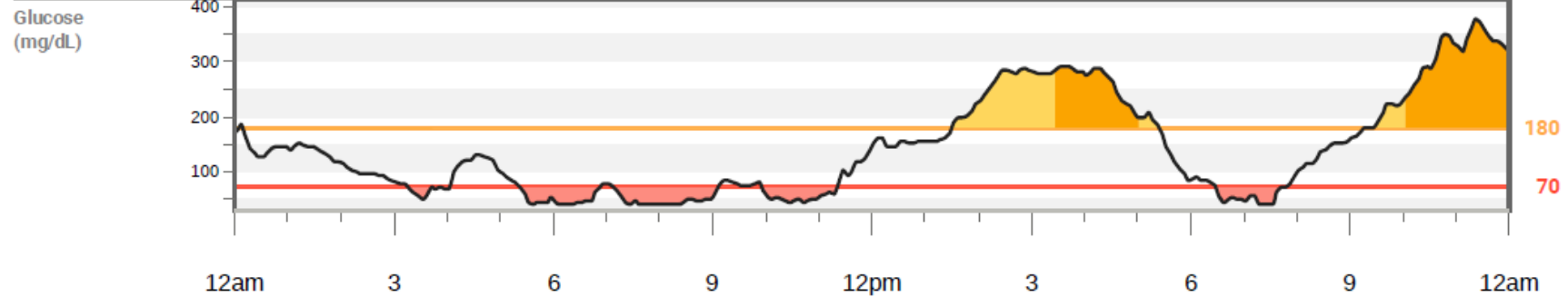
# Too Much Basal

## *Example one*

Sun, May 9, 2021



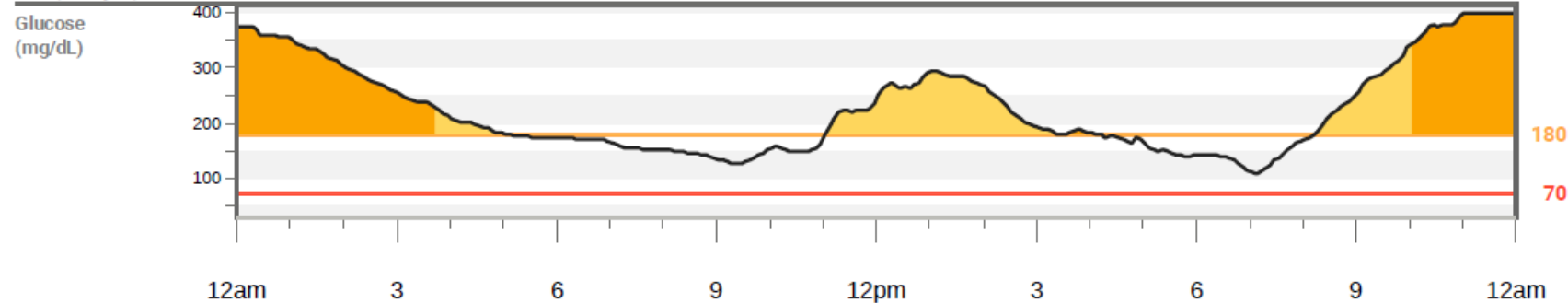
Sat, May 8, 2021



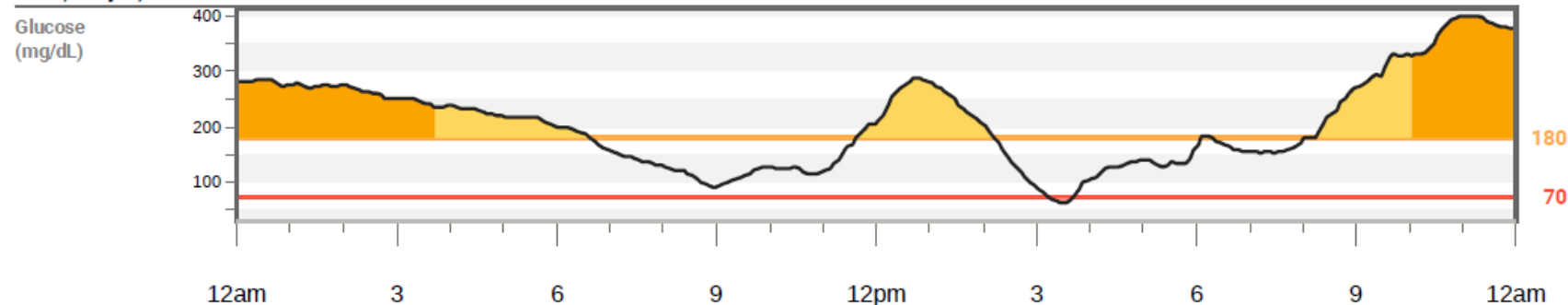
# Too Much Basal

## *Example one*

**Tue, May 4, 2021**



**Mon, May 3, 2021**

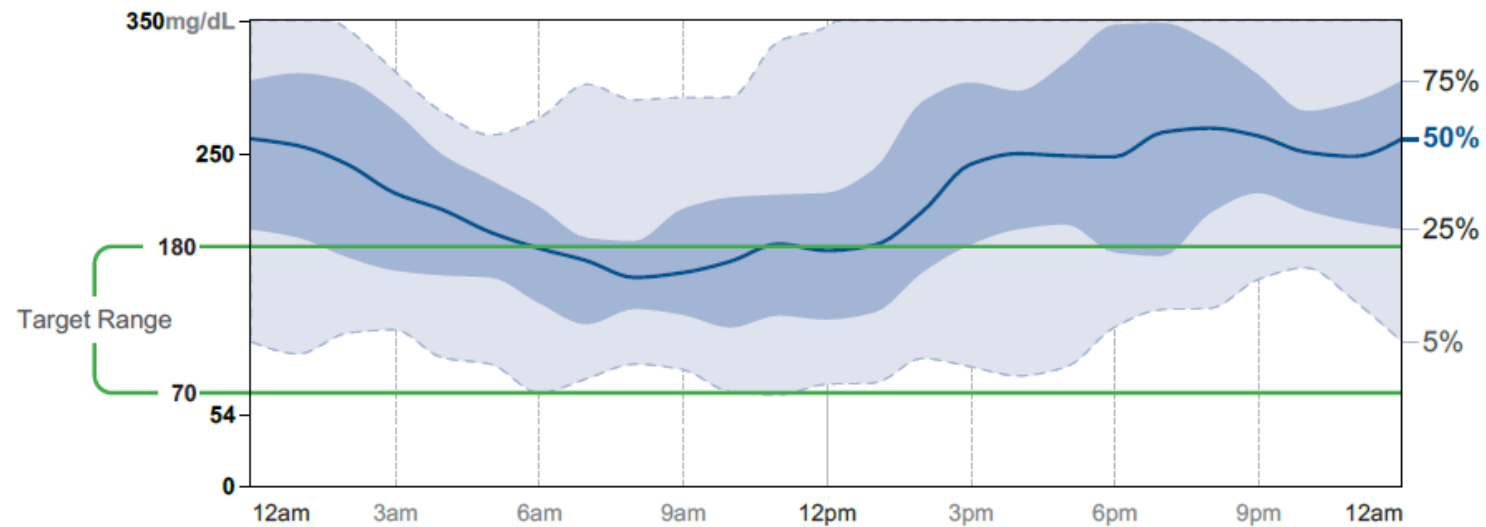


# Too Much Basal

## *Example two*

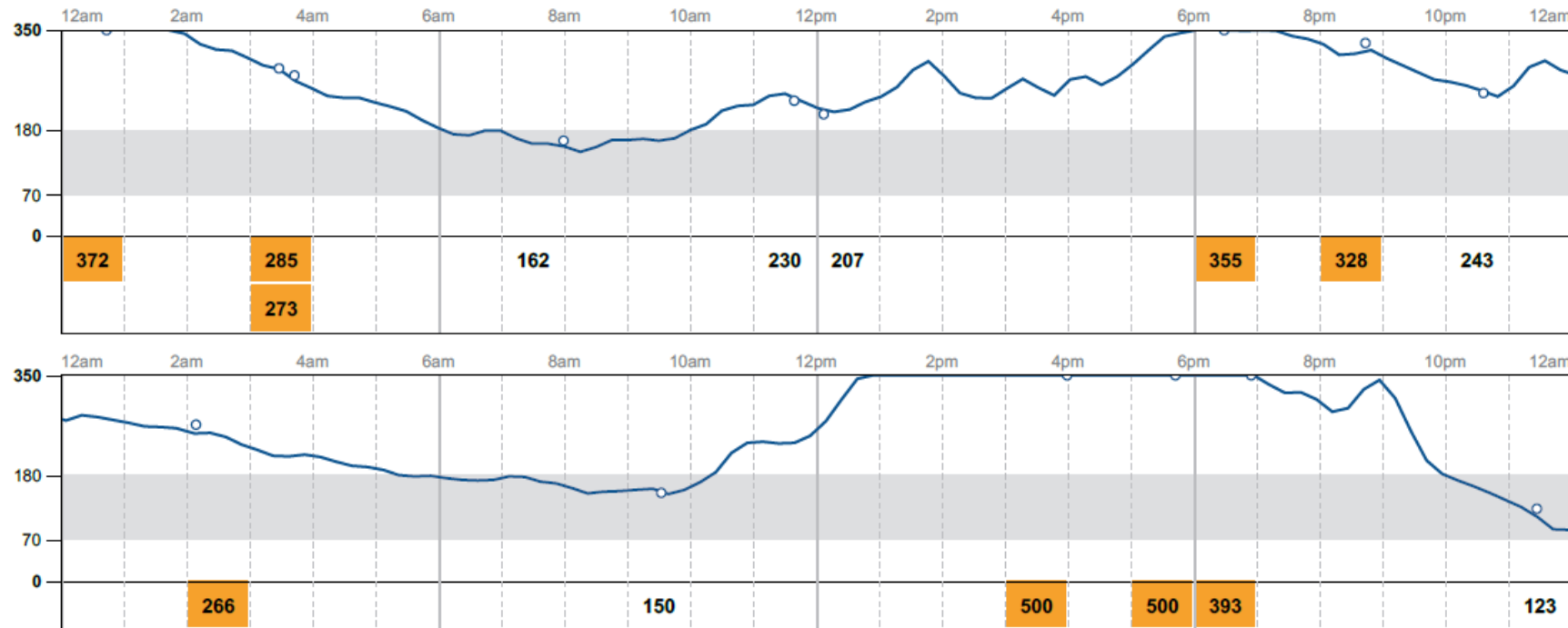
### AMBULATORY GLUCOSE PROFILE (AGP)

AGP is a summary of glucose values from the report period, with median (50%) and other percentiles shown as if occurring in a single day.

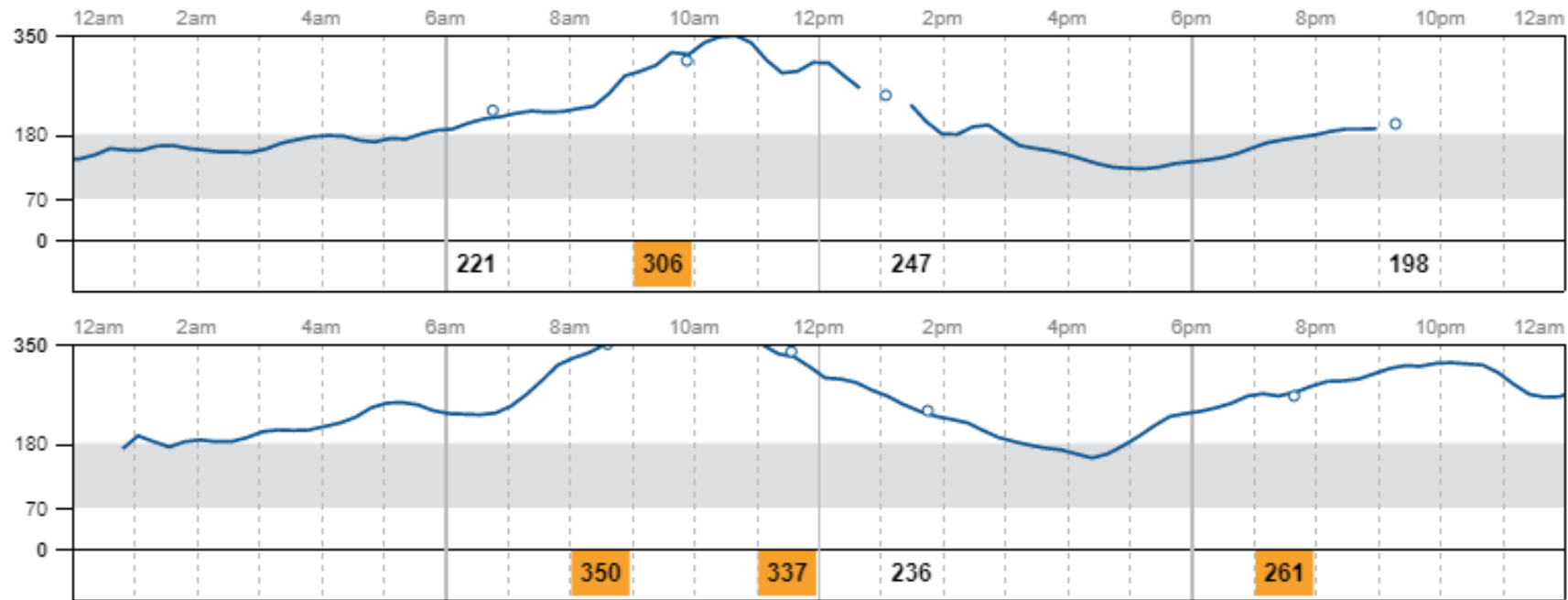


# Too Much Basal

## *Example two*

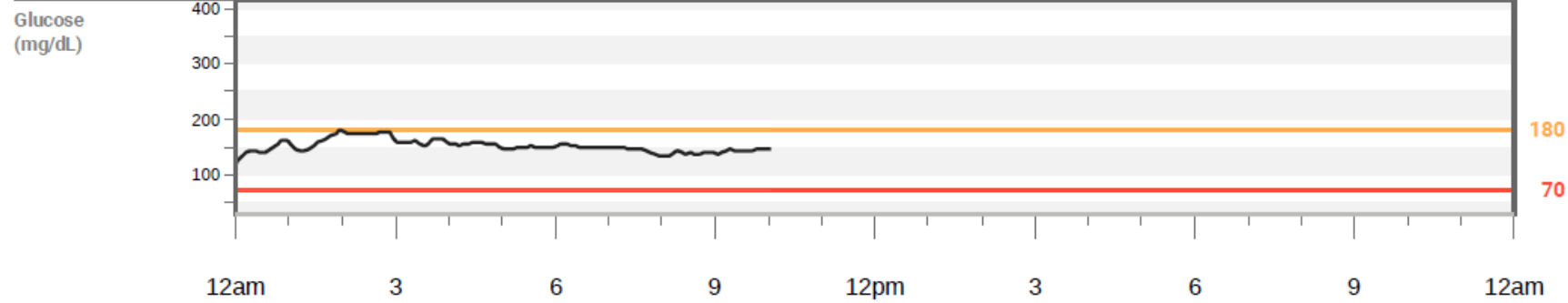


# Insufficient basal?

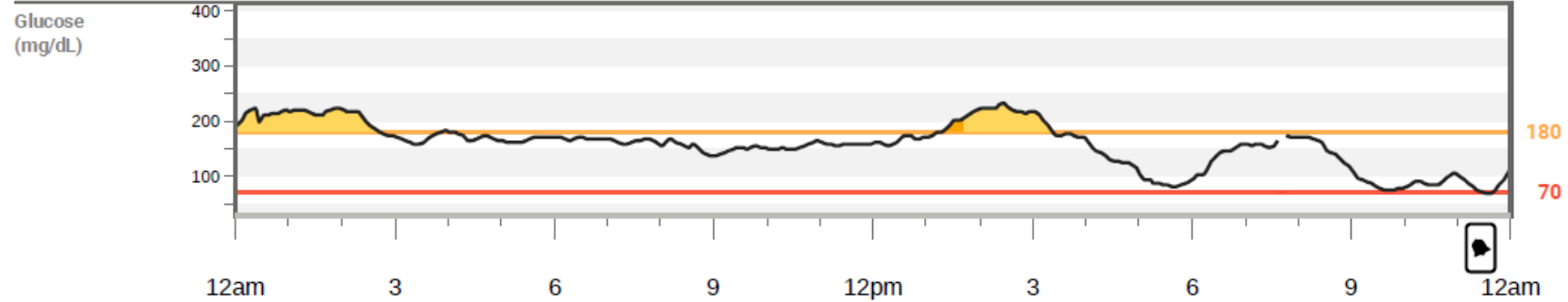


# What should “basal” look like?

Wed, Apr 28, 2021

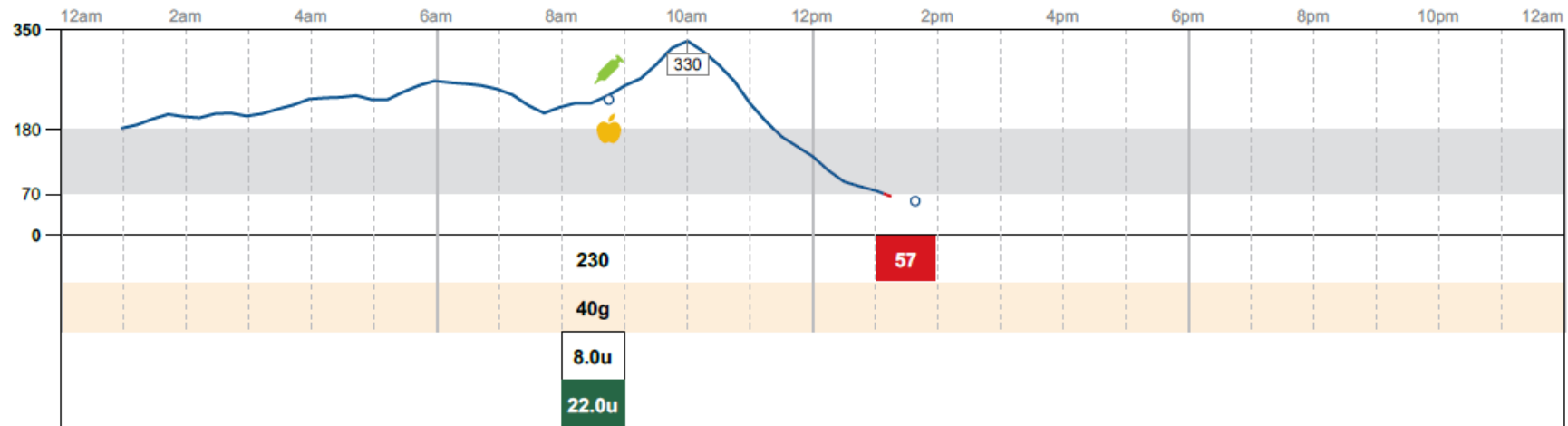


Tue, Apr 27, 2021



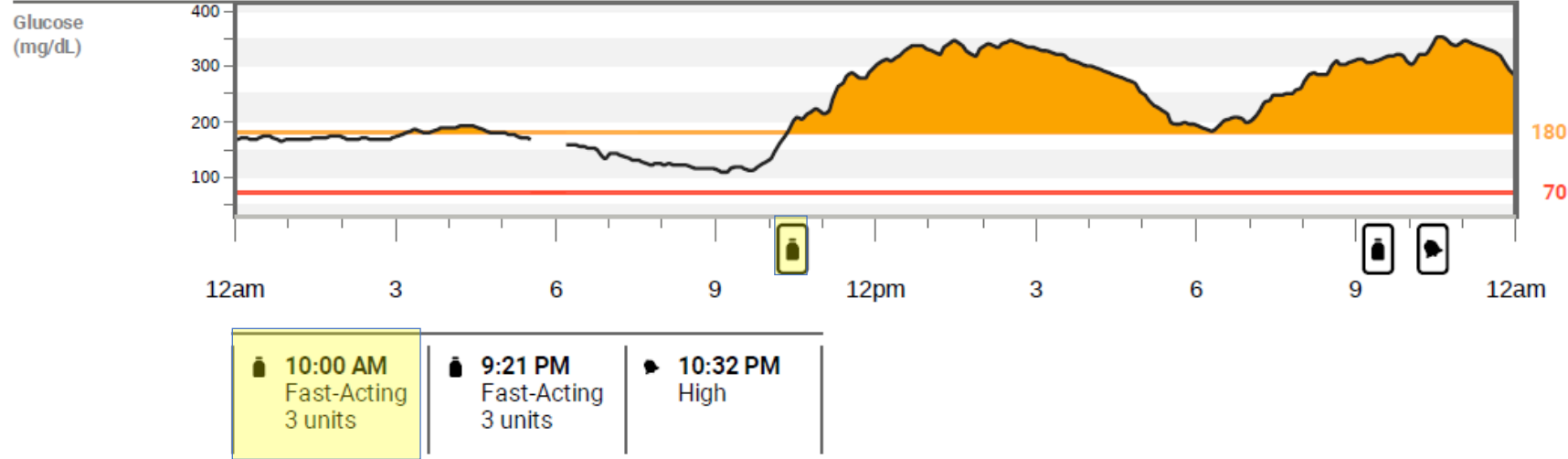


# Too much prandial?



# Too little prandial

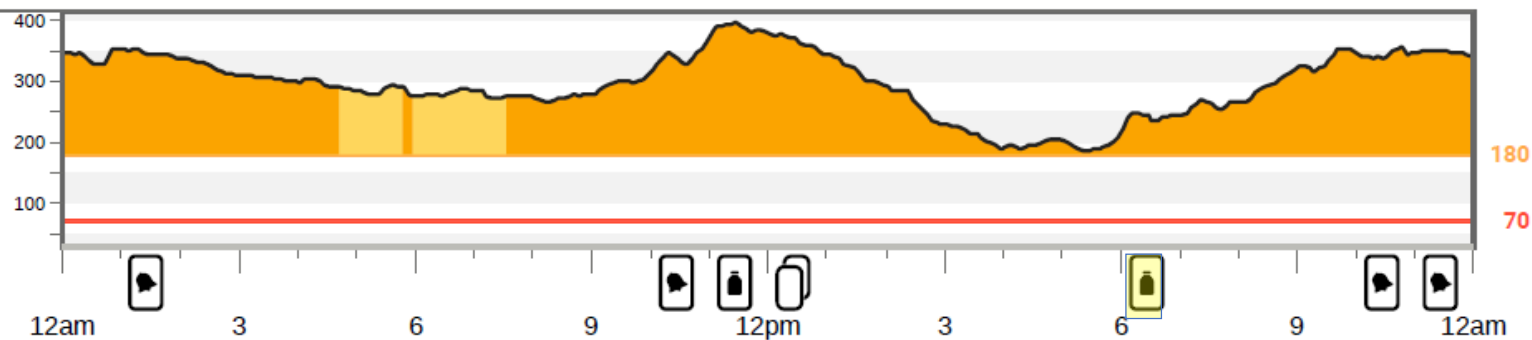
Sat, May 8, 2021



# Too little prandial

Sun, May 2, 2021

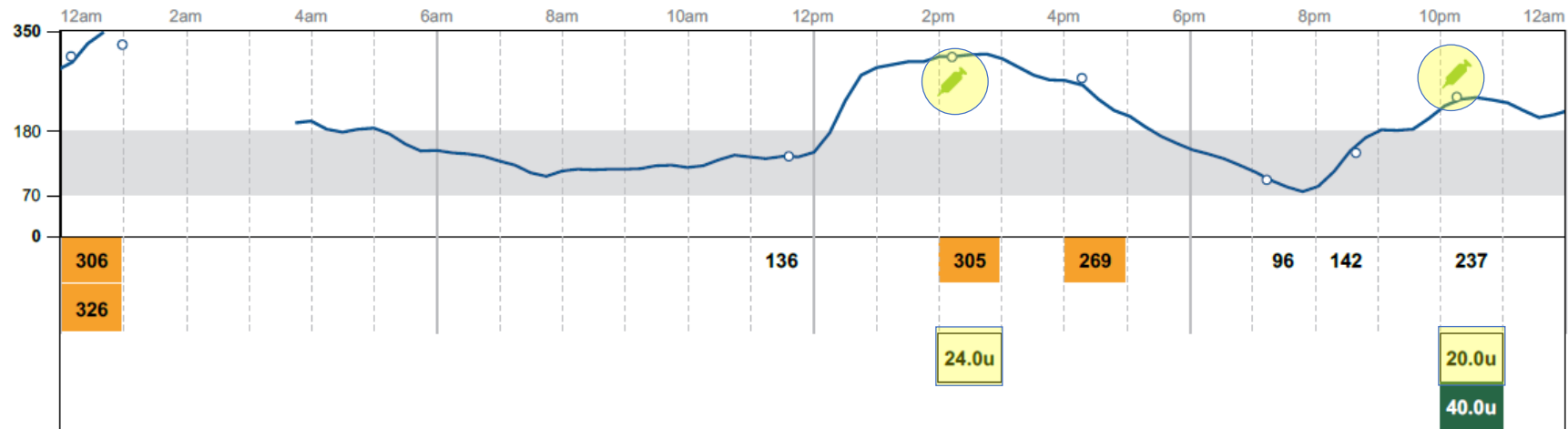
Glucose  
(mg/dL)



1:07 AM High	10:52 AM High	11:05 AM Fast-Acting 6.6 units	12:07 PM High	12:14 PM Fast-Acting 3 units	6:43 PM Fast-Acting 4 units
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# Mismatched timing of prandial

## *Example one*

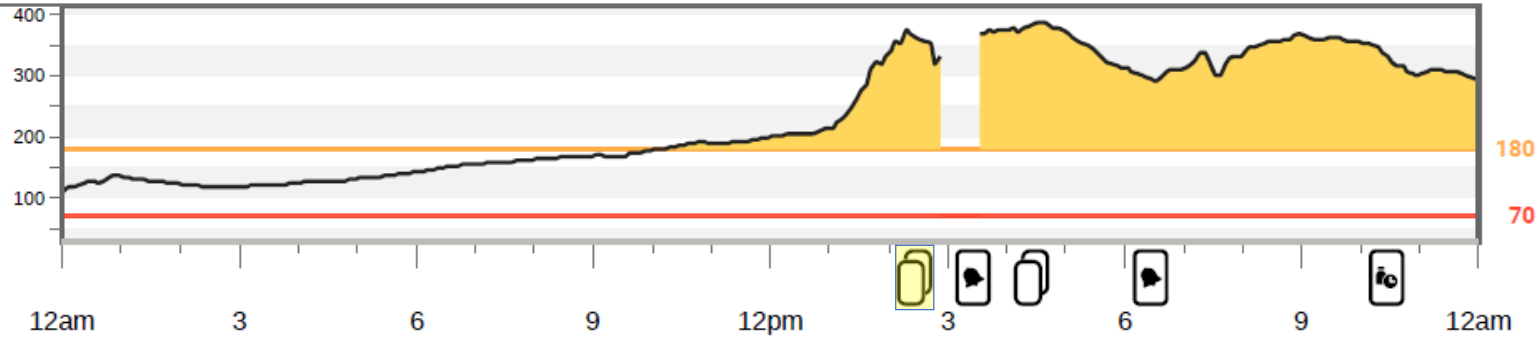


# Mismatched timing of prandial

## *Example two*

Sat, May 1, 2021

Glucose  
(mg/dL)



2:05 PM  
Fast-Acting  
9 units

2:17 PM  
High

3:36 PM  
Signal Loss

4:01 PM  
Signal Loss

4:02 PM  
High

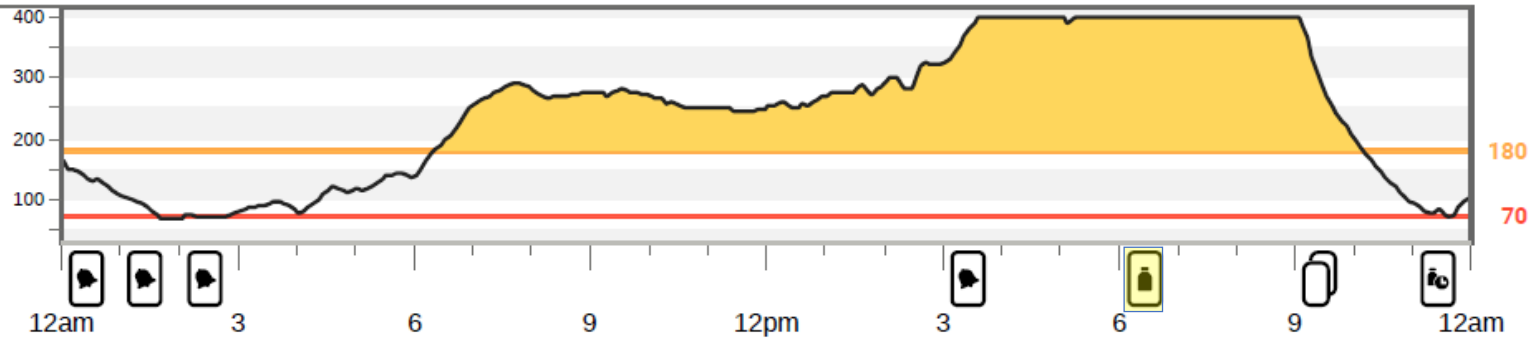
6:57 PM  
Signal Loss

# Mismatched timing of prandial

## *Example two*

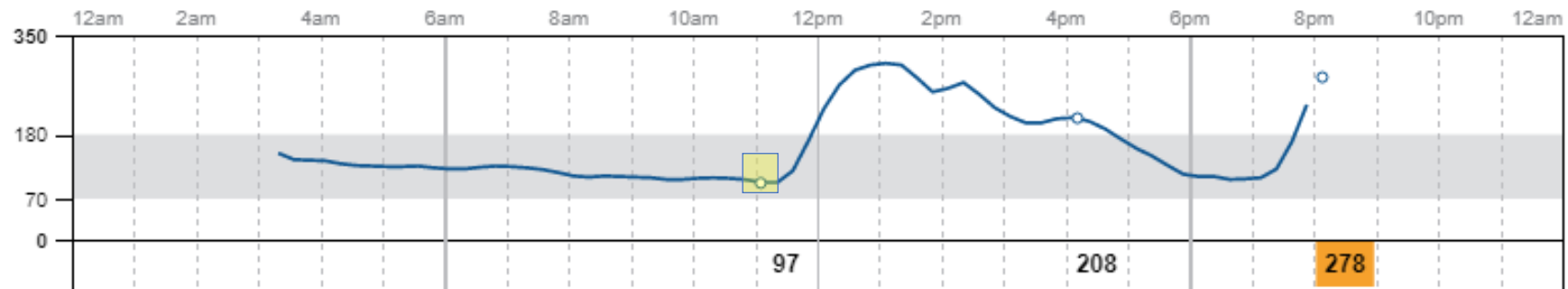
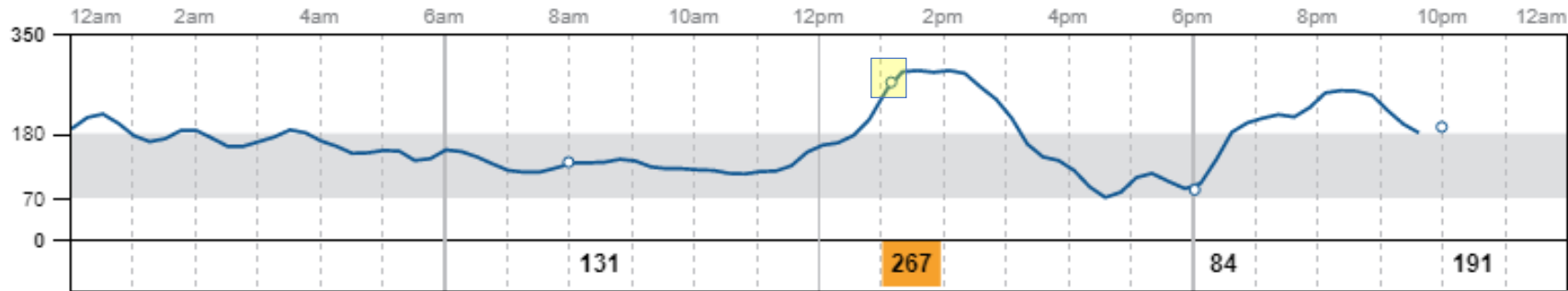
Fri, Apr 30, 2021

Glucose  
(mg/dL)



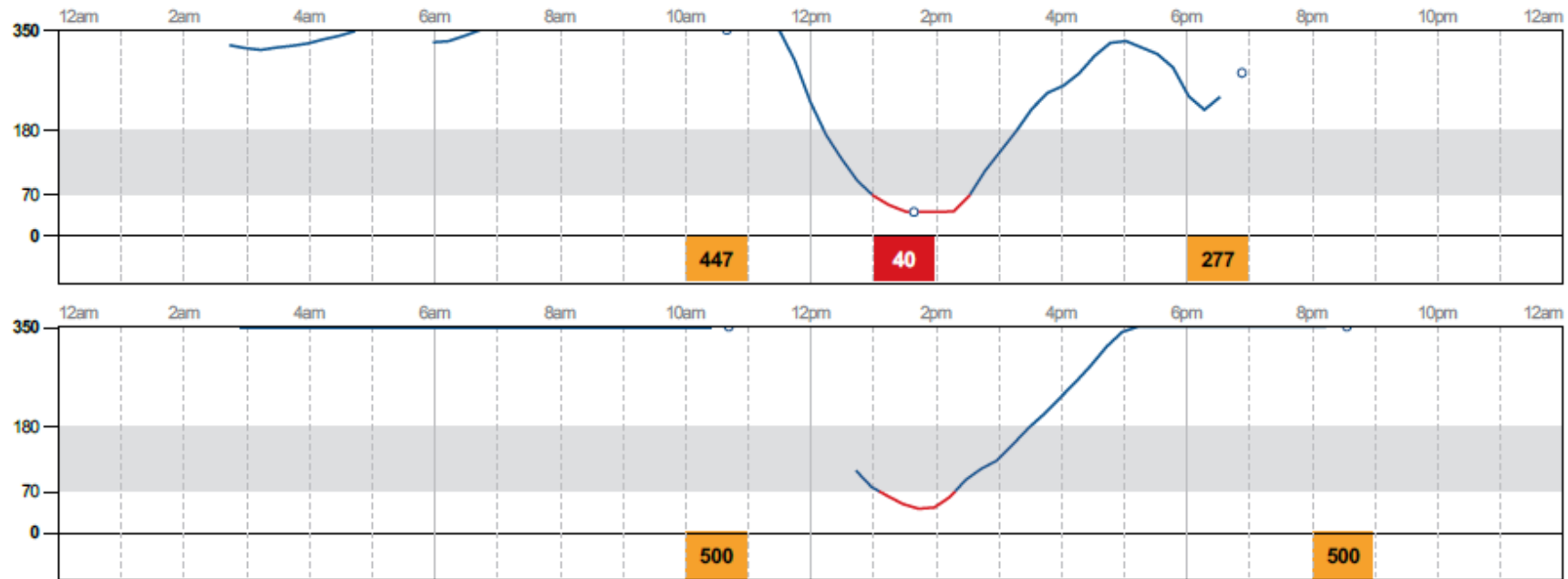
# Mismatched timing of prandial

## *Example three*



# Overcorrecting lows

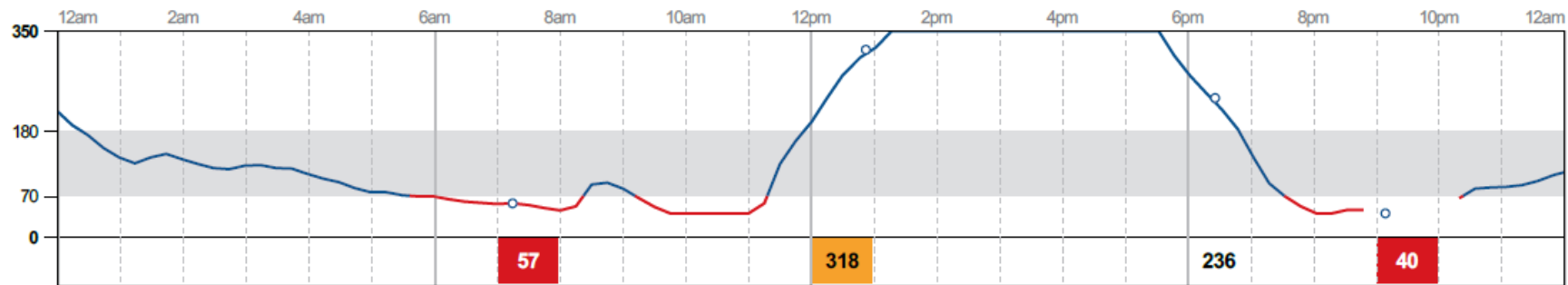
## *Example one*





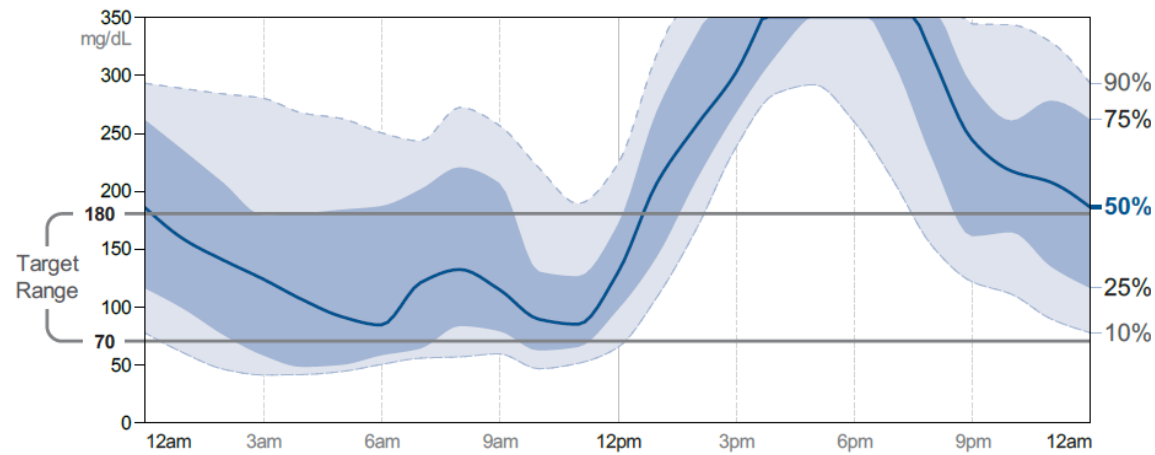
# Overcorrecting lows

## *Example two*



**Ambulatory Glucose Profile**

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



# Overcorrecting lows

## *Example two*

Average  
Glucose

**218**  
mg/dL

88-116\*

Time In Range

Above 180 mg/dL  
(above 250 mg/dL: 38%)

**53 %**

In Target Range  
70-180 mg/dL

**31 %**

Below 70 mg/dL  
(below 54 mg/dL: 9%)

**16 %**

Coefficient  
of  
Variation  
(CV)

**61.4 %**

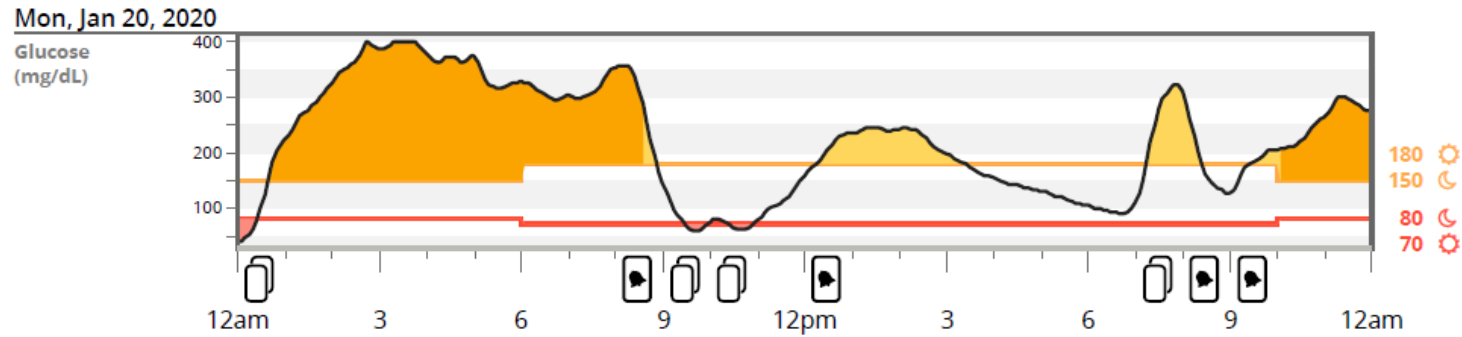
19-25\*

Standard  
Deviation  
(SD)

**133.9**  
mg/dL

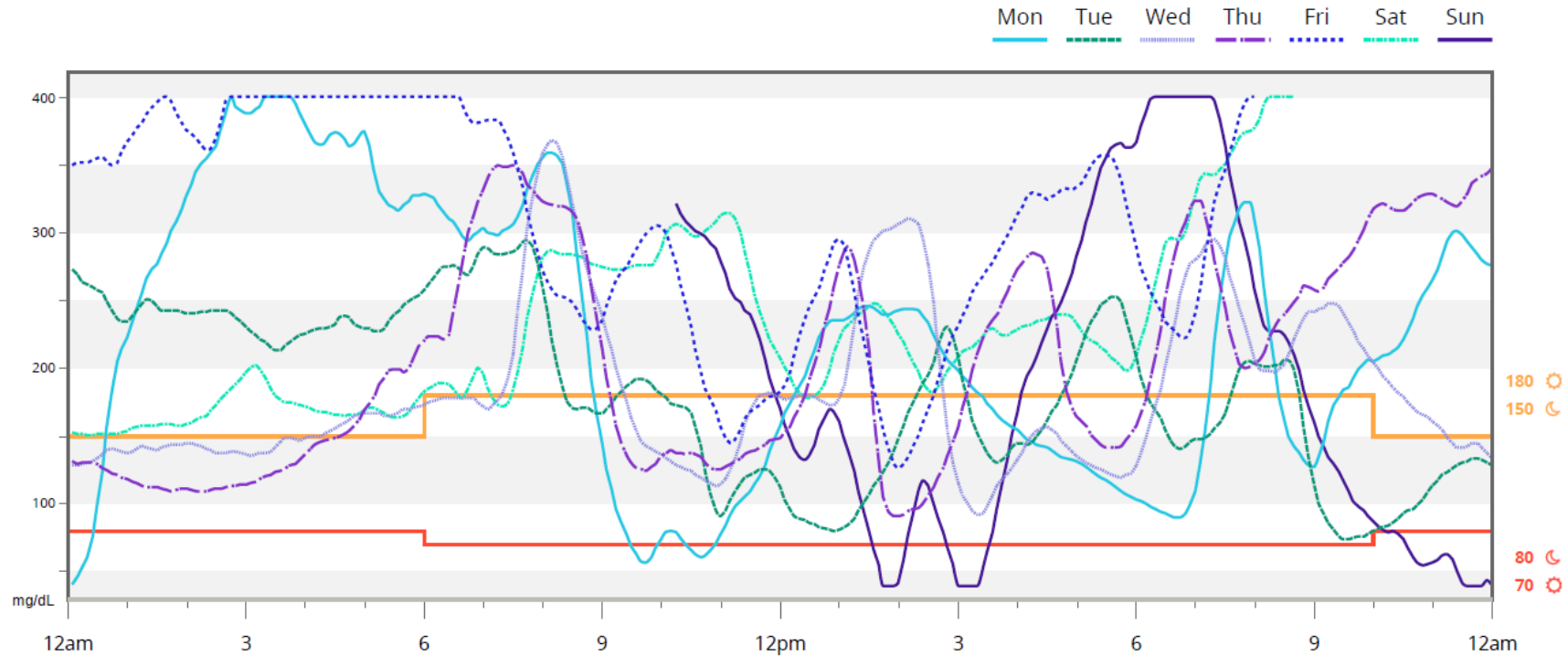
10-26\*

# Reactive self-management



12:34 AM Rise Rate	12:49 AM High	8:34 AM Fall Rate	9:19 AM Urgent Low Soon
9:44 AM Urgent Low	9:49 AM Urgent Low Soon	9:59 AM Low	10:14 AM Low
10:34 AM Urgent Low Soon	10:49 AM Low	12:29 PM High	7:14 PM Rise Rate
7:19 PM High	8:14 PM Fall Rate	9:44 PM High	

# Reactive self-management



# Wants HbA1c <5%

## AGP Report

July 19, 2020 - August 15, 2020 (28 Days)

### GLUCOSE STATISTICS AND TARGETS

July 19, 2020 - August 15, 2020 28 Days

% Time CGM is Active 100%

Ranges And Targets For	Type 1 or Type 2 Diabetes
<b>Glucose Ranges</b>	<b>Targets % of Readings (Time/Day)</b>
Target Range 70-180 mg/dL	Greater than 70% (16h 48min)
Below 70 mg/dL	Less than 4% (58min)
Below 54 mg/dL	Less than 1% (14min)
Above 180 mg/dL	Less than 25% (6h)
Above 250 mg/dL	Less than 5% (1h 12min)
Each 5% increase in time in range (70-180 mg/dL) is clinically beneficial.	

Average Glucose 89 mg/dL

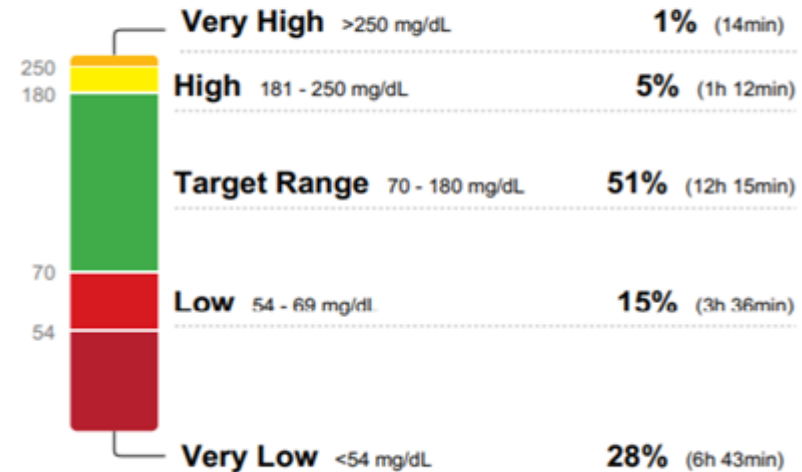
Glucose Management Indicator (GMI) 5.4%

Glucose Variability 54.9%

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

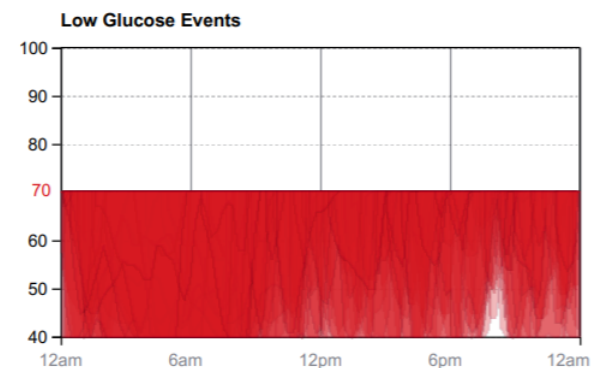
## LibreView

### TIME IN RANGES



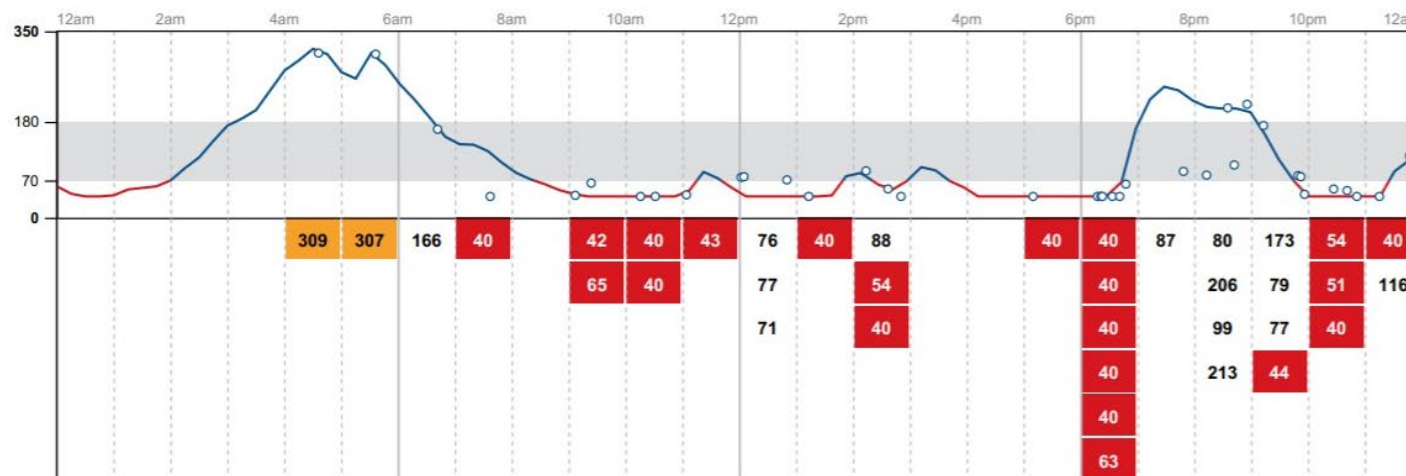
Wants HbA1c <5%

LOW GLUCOSE EVENTS	130
Average duration	187 Min



SUN Aug 2

Glucose mg/dL



# Questions?

- Contact me at:
- [Daniel.Stolberg@vcuhealth.org](mailto:Daniel.Stolberg@vcuhealth.org)
- 804-221-5688



# ECHO cases 10/28/2021

MARIA GABRIELA NEGRON M., MD  
ENDOCRINOLOGY  
VCUHS



# Case Study #1

- 37-yo male, African American, single, employed
- PMHx
  - Type 2 diabetes mellitus, alcohol use disorder
  - Last A1c 7.7%
  - Creatinine 0.78
  - TSH 0.89
  - 25-OH vitamin D 13.4
  - C-peptide 0.8 with BG 185
  - GAD <5.0
- Current medications: insulin glargine 10U daily, metformin 500mg BID
- Patient had tried Trulicity, Glipizide, Sitagliptin
- Main concern: Differential diagnosis between type of diabetes (1 vs 2 vs secondary)

**Any clarifying questions?**  
**Any proposed solutions?**

# Case Study #2

- 60-yo male, African American, unemployed
- PMHx
  - HIV on ART, CAD, type 2 DM, HTN, HLD, eczema, chronic hepatitis, CKD
  - Recent diagnosis of central adrenal insufficiency secondary to chronic steroid use for eczema
  - Medications: glargine 18U daily, metformin 1000mg daily
  - A1c 6.8%
  - Creatinine 1.49; GFR 58mL/min
- Medications: Glargine, metformin
- Main concern: Titration of diabetes medications now that patient will be off steroids; some agents preferred over others?

**Any clarifying questions?**  
**Any proposed solutions?**

# STEROID-INDUCED HYPERGLYCEMIA

Dose-dependent

Greater increase in post prandial glucose values

Risk factors:

- Family history of diabetes
- Increased age
- Obesity
- History of gestational diabetes

Transient hyperglycemia  
can occur after  
intraarticular  
glucocorticoid therapy

New onset hyperglycemia  
in patients with glucose  
intolerance

# STEROID-INDUCED HYPERGLYCEMIA

## Mechanism of action

Augmentation of hepatic gluconeogenesis

Inhibition of glucose uptake in adipose tissue

Alteration of receptor and post receptor functions – increasing insulin resistance

Beta cell dysfunction/injury

# DISTINGUISHING TYPE OF DIABETES

Clinical features	Type 1 diabetes mellitus	Type 2 diabetes mellitus
Age of diagnosis (years)	Majority <25, but may occur at any age	Typically >25 but incidence is increasing in adolescents, paralleling increasing rates of obesity in children and adolescents*
Weight	Usually thin, but with obesity epidemic overweight and obesity at diagnosis becoming more common	>90% at least overweight
Autoantibodies	Present	Absent
Insulin dependent	Yes	No
Insulin sensitivity	Normal when controlled	Decreased
Family history of diabetes	Infrequent (5 to 10%)	Frequent (75 to 90%)
Risk of diabetic ketoacidosis	High	Low

*Source: UpToDate, 2021*

# DISTINGUISHING TYPE OF DIABETES

## Approximate frequency of diabetes mellitus in different types of pancreatic disease

Disease	Percent
Total pancreatectomy	100
Pancreatectomy	
Distal pancreatectomy	20 to 40
40 to 80 percent resection	40
80 to 90 percent resection	>60
Pancreatitis	
Acute	2 to 18
Chronic calcifying	60 to 70
Chronic noncalcifying	15 to 30
Hemachromatosis	
Primary	75
Secondary	16
Carcinoma	40 to 50
Cystic fibrosis	10

*Source: UpToDate, 2021*

# Case Studies

- Anyone can submit cases: [www.vcuhealth.org/echodmhtn](http://www.vcuhealth.org/echodmhtn)
- Receive feedback from participants and content experts
- Earn **\$150** for submitting and presenting

# Provide Feedback

[www.vcuhealth.org/echodmhtn](http://www.vcuhealth.org/echodmhtn)

- Feedback
  - Overall feedback related to session content and flow?
  - Ideas for guest speakers?



# Access Your Evaluation

vcuhealth.org/services/telehealth/for-providers/education/diabetes-and-hypertension-project-echo



## For Providers

Education



**Diabetes and Hypertension Project ECHO**



Our Team

Curriculum

Claiming CE Credit

Contact Us

VCU Nursing Home ECHO



VCU Health Palliative Care ECHO



Virginia Opioid Addiction ECHO



Virginia Sickle Cell Disease ECHO



# Diabetes and Hypertension Project ECHO

Welcome to the Diabetes and Hypertension Extension for Community Health Outcomes or ECHO, a virtual network of multidisciplinary diabetes and hypertension experts. An ECHO model connects professionals with each other in real-time collaborative virtual sessions on Zoom. Participants present de-identified cases to one another, share resources, connect to each other, and grow in their expertise. This ECHO will address practice level issues and solutions related to managing complex patients with difficult to control diabetes and hypertension. [Register now for an ECHO Session!](#)

## Network, Participate and Present

- Engage in a collaborative community with your peers.
- Listen, learn and discuss informational and case presentations in real-time.
- Take the opportunity to [submit your de-identified case study](#) for feedback from a team of specialists for diabetes and hypertension.
- [Provide valuable feedback.](#)
- Claim CE credit by [texting in attendance](#).

## Benefits



# VCU Diabetes & Hypertension Project ECHO Clinics

2<sup>nd</sup> and 4<sup>th</sup> Thursdays —12 p.m. to 1 p.m.

## Mark Your Calendars — Upcoming Sessions

**Nov. 11:** Hypertension in older adults

Please register at [www.vcuhealth.org/echodmhtn](http://www.vcuhealth.org/echodmhtn)

Thank you for coming!



Text **19185-18817** to **804-625-4041** for CE credit

Reminder: **Mute** and **Unmute** to talk  
Press **\*6** for phone audio  
Use **chat** function for questions