CMHC
Cardiometabolic Health Congress

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Foundations of Cardiometabolic Health Certification Course

Certified Cardiometabolic Health Professional (CCHP)

Smart Pens in 2022 and Beyond

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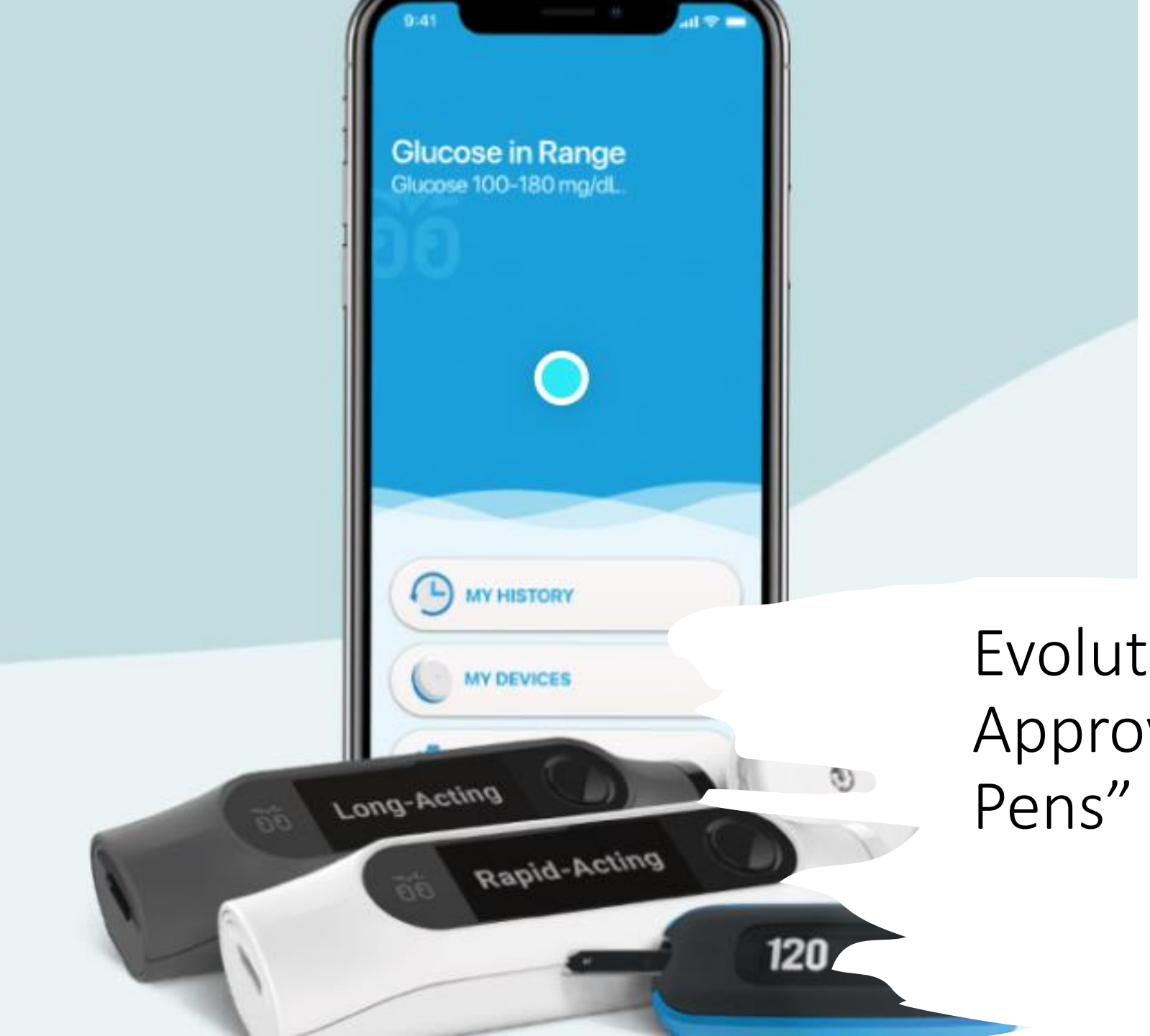


Evolution to 2021: 2 FDA Approved “Smart Insulin Pens”

Core Components of Smart Insulin Pens

Core Components

- Wireless connectivity between pen, app, and CGM
- Digital dose capture between pen and app
- Integration with bolus calculator
- Future: integration with AI for basic and trend arrow dosing adjustments

The Promise of Smart Pens

- My opinion: The inability of the clinician to see MDI dosing has been our greatest gap in insulin management
- Smart insulin pens allow both patients and providers to see granularity of insulin dosing only seen in the past with insulin pumps:
  - Missed or late doses
  - Calculated dosing to avoid insulin stacking
- Access of data on download to allow both clinician and patient to see the data together and promote shared decision making for appropriate insulin dosing and adjustments

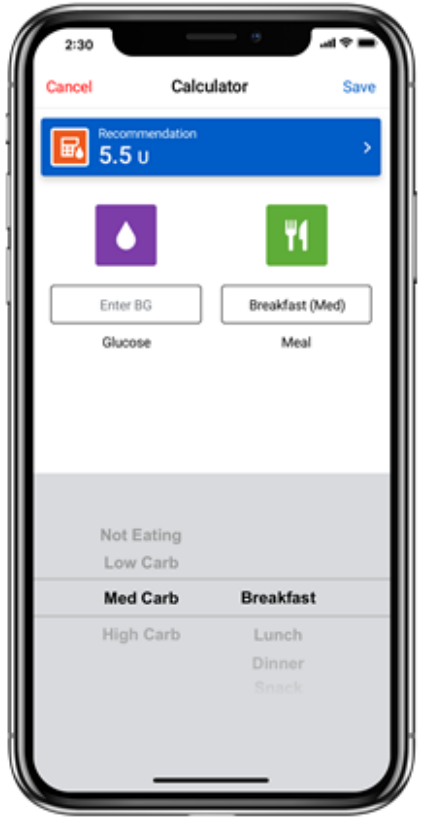
Connected Pen Options

Medtronic InPen with Guardian Connect or Dexcom G6

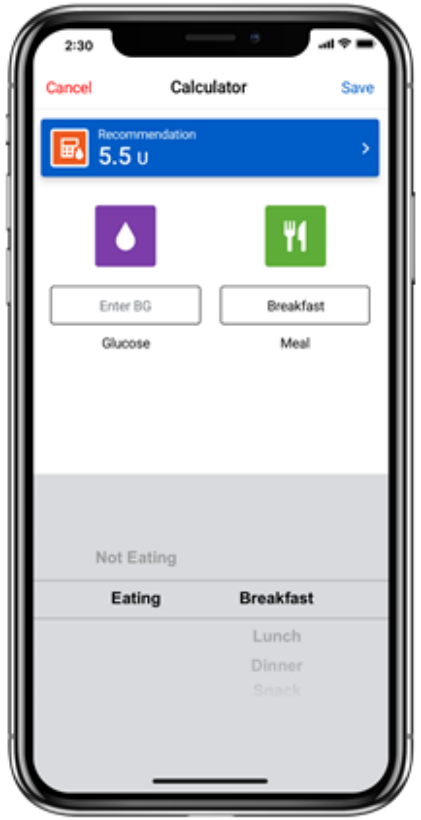
Bigfoot Unity with Libre 2

Dose Calculator

Carb Counting



Meal Estimation



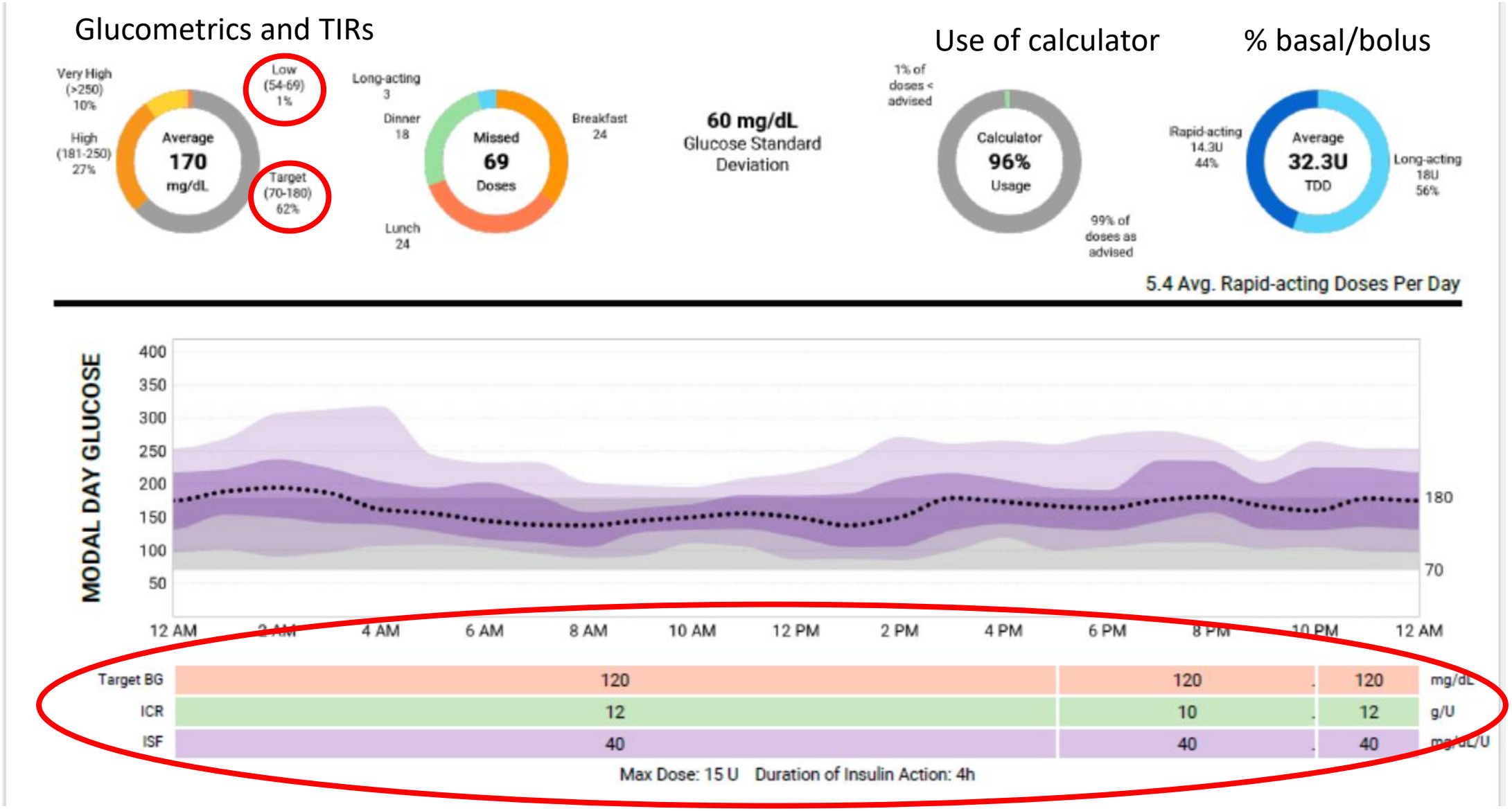
Fixed Dose

Use of a bolus calculator:

- Reduced fear of hypoglycemia
- Improved confidence in the accuracy of their insulin bolus dose
- Increased treatment satisfaction

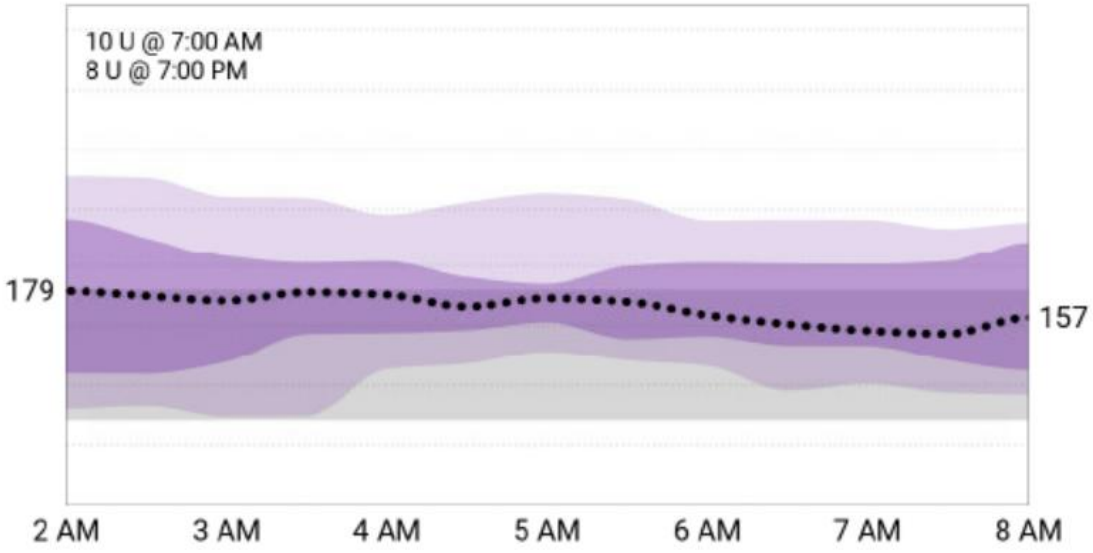
Ziegler R, Cavan DA, Cranston I, et al. *Diabetes Care*. 2013; 36(11):3613-3619.
Barnard KD, Parkin CG, Young A, et al.. *J Diab Sci Tech*. 2012;6:144–149.
Vallejo-Mora MdR, Carreira-Soler, Linares-Parrado F, Olveira G, et al.. *Journal of Diabetes*. 2017 (9):24-33.

Smart Pen Dashboard



Assessing Basal Insulin

LONG-ACTING ASSESSMENT



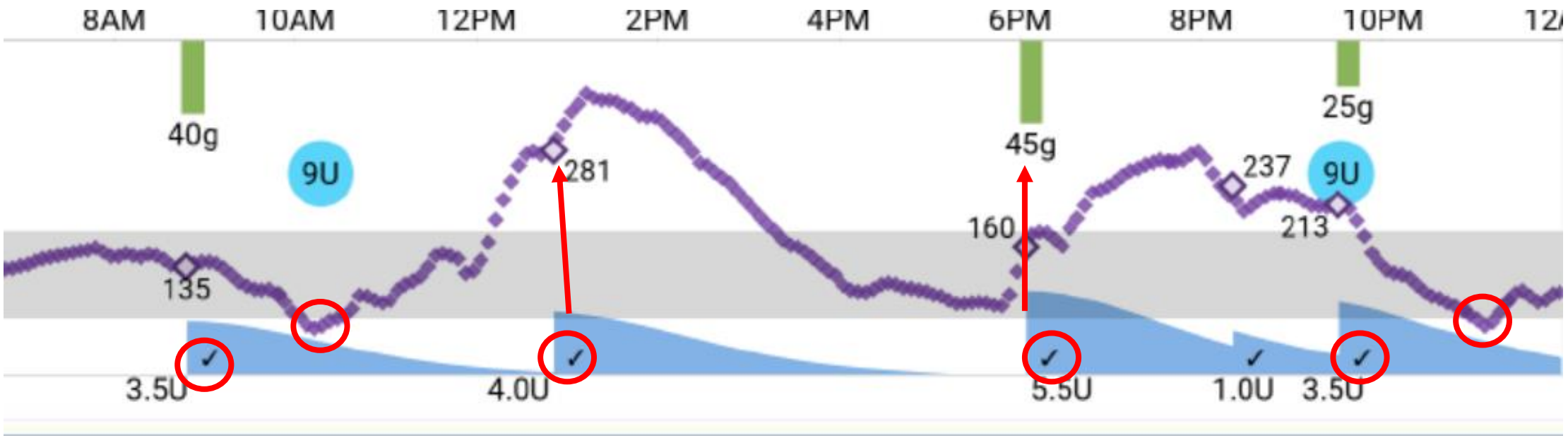
Days Included in Assessment	12 of last 14 days
Average Daily Dose Taken	18.3 U
# Days with Glucose < 70 mg/dL	2 ▼
Median Bedtime to Fasting (Change)	179 to 157 (-22 mg/dL)

Note: Days with overnight boluses are excluded.

▲ Rising fasting glucose of 30 mg/dL or more may indicate long-acting dose should be increased.
▼ Falling fasting glucose of 30 mg/dL or more or days with glucose < 70 mg/dL may indicate long-acting dose should be decreased.

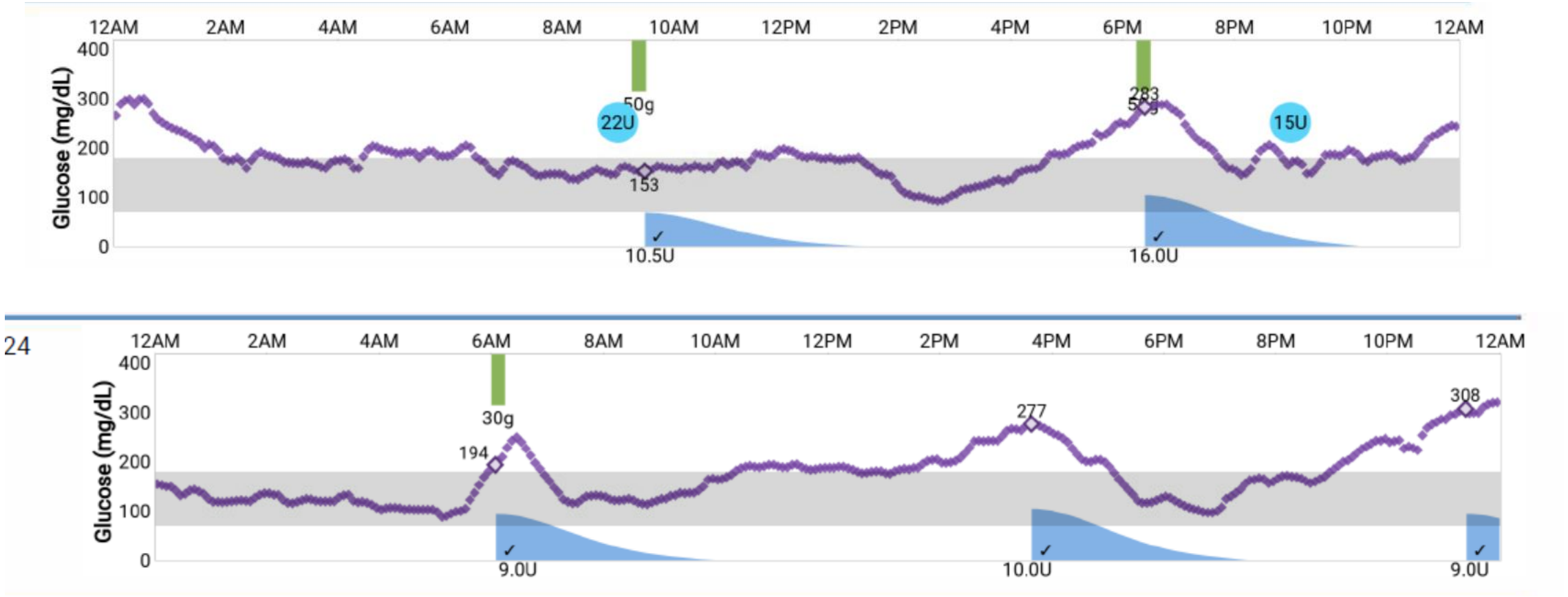
How To Help Patients with Mealtime Insulin

60 y/o type 1 math teacher, HbA1c consistently in high 7s/low 8s. Why?



Conclusion: mealtime doses appear too aggressive, and this forces her to give insulin late

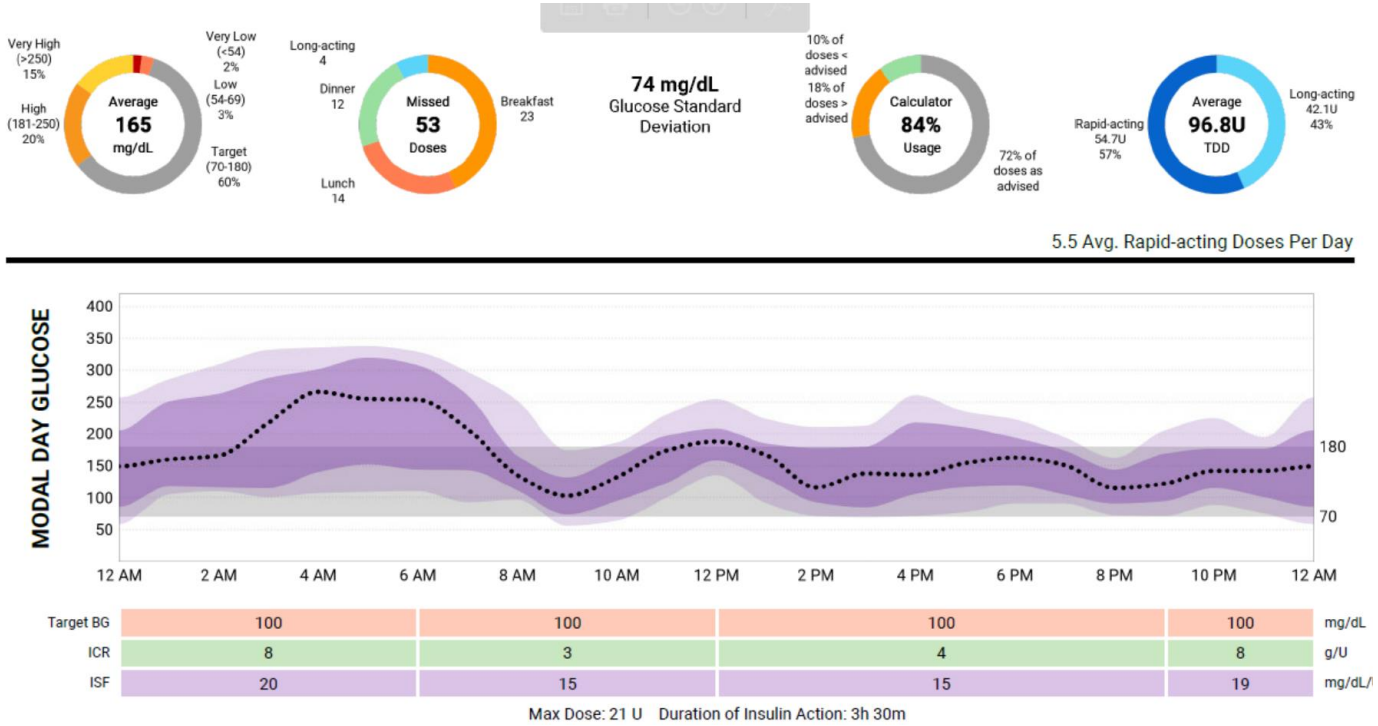
Type 1 Diabetes (BMI 33): Glargine and Lispro



Basal doses appear good, misses prandial insulin often, good correction doses

Patient Case: 35 y/o Woman with T2D X 5 years and Severe Insulin Resistance

- A. Gastroparesis
- B. Polycystic ovarian disease
- C. Hypothyroidism
- D. Prolactin secretining adenoma
- E. Marijuana Smoker



Conclusions

- Smart pens “fill the gap” with insulin dosing and allows clinicians to help their patients not possible before
- These pens also help patients remember if they have taken their insulin or not and most importantly help prevent “insulin stacking” to prevent hypoglycemia
- These tools will become a common part of diabetes management in the next few years.