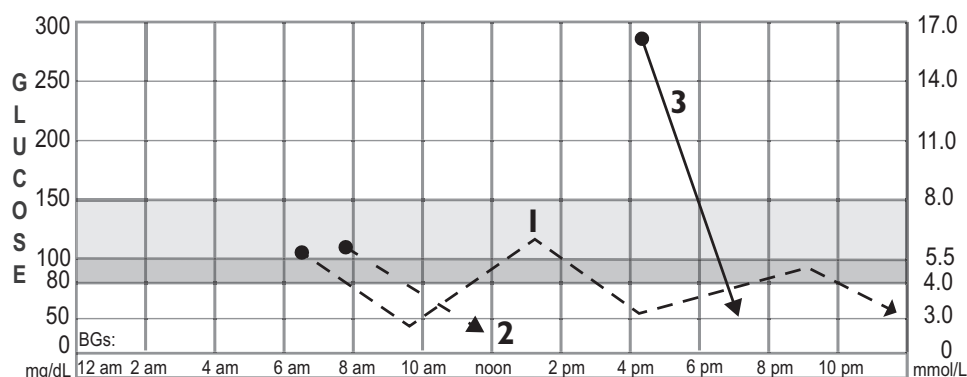


### 13.1 Glucose Stability Is Possible If You:

- Are motivated
- Are educated in diabetes management
- Have appropriate pump settings
- Receive good feedback through glucose monitoring

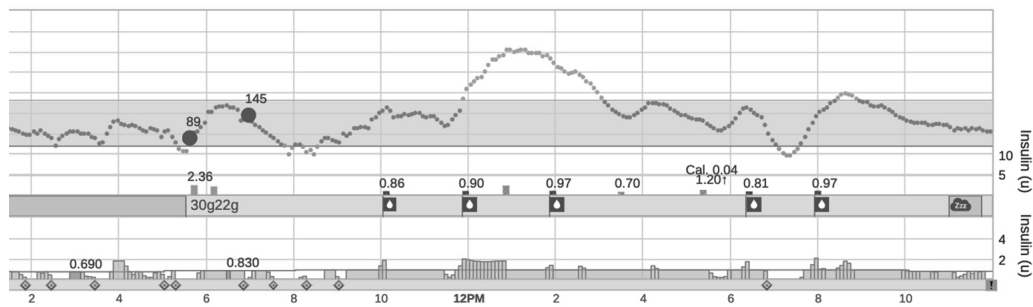
From Dr. Robert Tattersall: Workshop  
On Home Monitoring of Blood Glucose,  
Nottingham Univ., 1980.

### 13.2 Common Frequent Low Patterns and Solutions

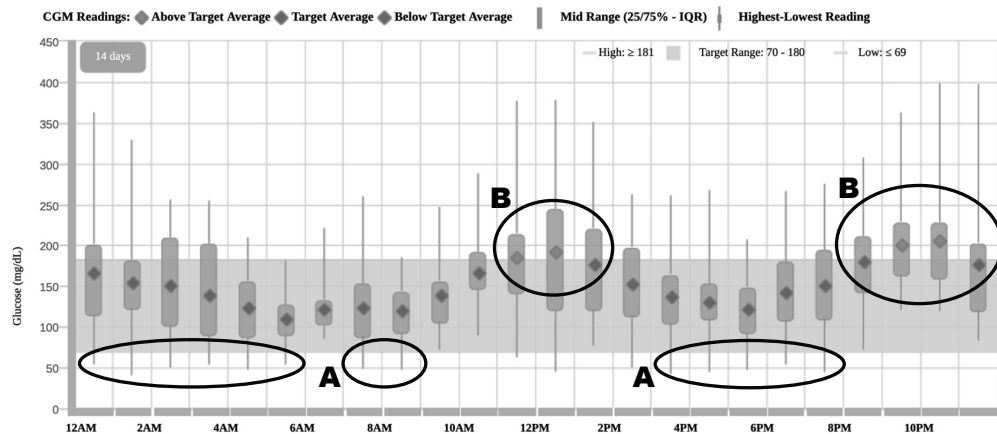


1. **frequent lows** – lower TDD by 5 to 10% and find new pump settings from the reduced TDD.
2. **frequent lows at a particular time of the day** – lower the basal rate 5 to 8 hours before the low reading typically happens or increase the CarbF for the previous meal.
3. **over-correcting highs** – raise the CorrF/ISF, do not increase recommended correction boluses unless CGM trend line suggests this is needed, set DIA to 4.5 hrs or longer. .

### 13.3 Frequent Lows on an AID



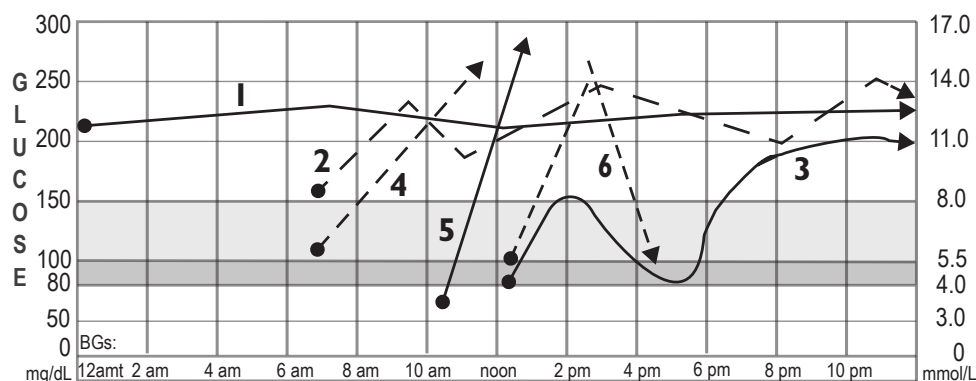
The glucose repeatedly goes low during the night and only minimal boluses are given during the day.



This 14-day graph shows frequent night and afternoon lows with readings frequently below 50 mg/dL in the lower circles marked A. Rebound highs follow at the B circles. The lows stopped once the basal rate was lowered from 0.83 to 0.60 u/hr, and the CarbF raised from 1u/11 grams to 1u/14 grams, allowing meal boluses to again be given. Settings matter, even on AID systems.

### 13.4 Common High Glucose Patterns and Solutions

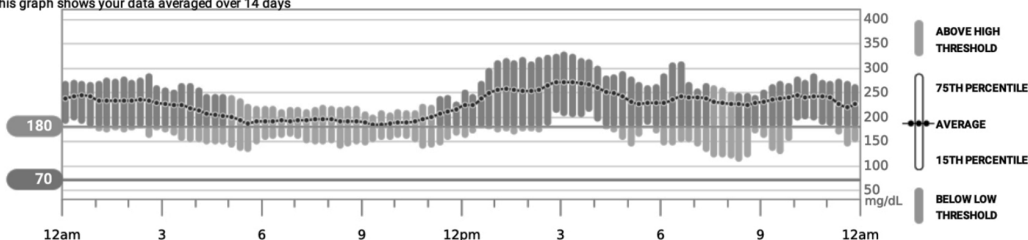
These common unwanted patterns are displayed on a **36 hour graph** from midnight one day to noon the next day. Specific solutions below.



1. **frequent highs that stay relatively flat all day** – raise the basal rates,
2. **frequent highs from post-meal spiking** – raise basal rates and lower the CarbF.
3. **most common pattern (lower readings during the day, then higher after dinner and into the night)** – raise afternoon and evening basal rate, lower dinner CarbF),
4. **frequent highs at a particular time of the day** – raise the basal rate 5 to 8 hours earlier or decrease the CarbF for the previous meal,
5. **over-treating lows** – don't overtreating: Carbs =  $1g/10\text{ lbs (5kgs)} + IOB \times CarbF$
6. **post-meal spiking** – review 3 causes and solutions in Section F,
7. Several patterns often coexist. Choose one at a time and adjust the basal rate or bolus most responsible for that pattern. Get rid of excess lows first and then the highs..

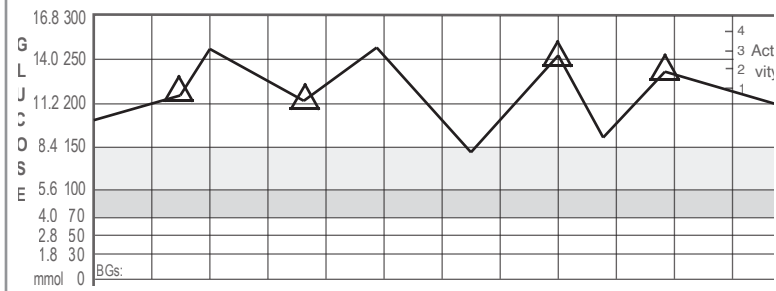
### 13.5 High Glucose All Day

This graph shows your data averaged over 14 days



Here, the basal rate would be increased all day, with perhaps a smaller CarbF for lunch and dinner. This can happen on an AID system with incorrect settings.

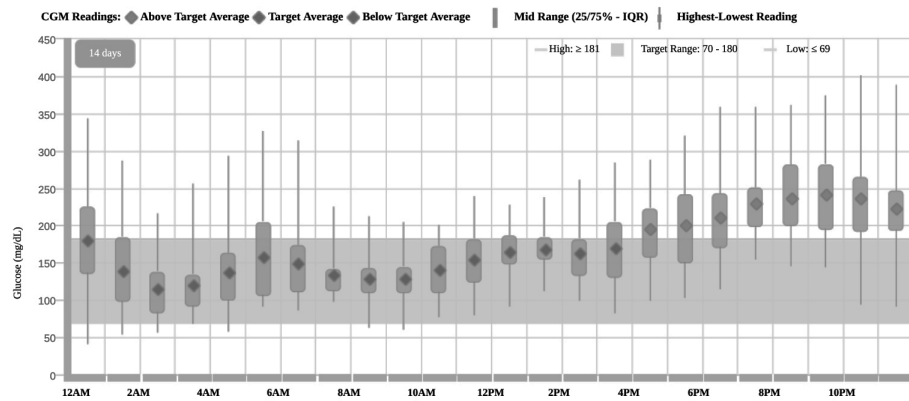
### 13.6 Frequently High with Post-Meal Rise



This pattern is an example of #2 in Figure 13.4.

### 13.7 Common High Glucose Pattern

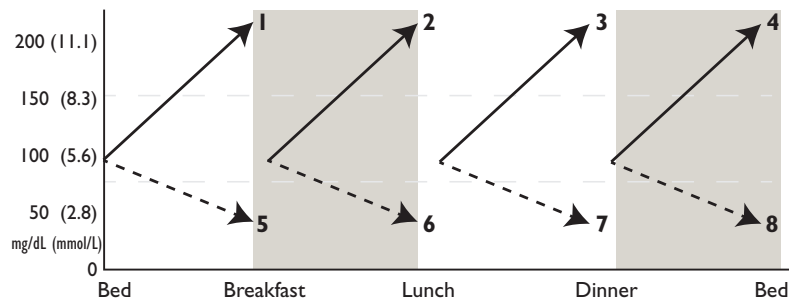
CGM Hourly | Thursday Feb 2024 - Wednesday Mar 2024



The major glucose elevation for this person on AID starts after their 3 pm dinner. Meal boluses are inadequate or missed, with some lows in the early morning after excessive corrections.

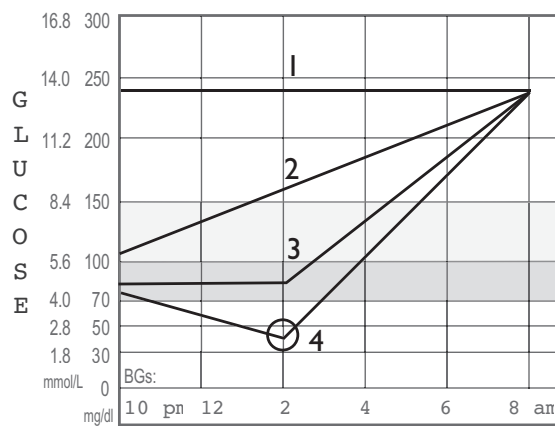
### 13.8 How to Stop Highs or Lows at a Particular Time of Day

Look for the time of day when your glucose typically goes low or high, and try a correction suggested for that number. Stop frequent lows first. For example, if your glucose goes low between breakfast and lunch, look at number 2 for suggestions.



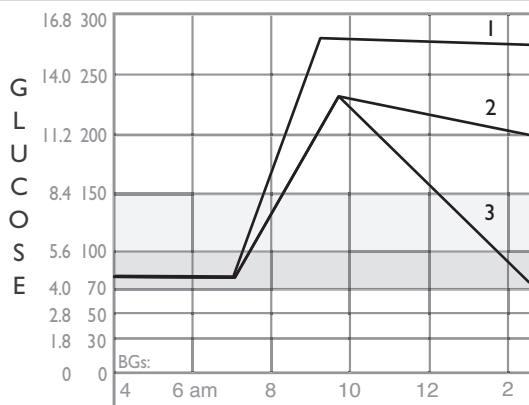
- 1) If the glucose usually goes up between bedtime and breakfast, raise your basal rate overnight at least 2 hours before the glucose starts to rise. (See 4 if your glucose is usually already high at bedtime.) See also Pattern E in this chapter.
- 2) Lower your breakfast CarbF or raise the basal rate(s) 5 to 8 hours earlier.
- 3) Lower your lunch CarbF or raise the basal rate(s) 5 to 8 hours earlier.
- 4) Lower your dinner CarbF or raise the basal rate(s) 5 to 8 hours earlier. Consider whether after-dinner snacks cause the rise
- 5) If your glucose usually goes low between bedtime and breakfast, lower the basal rate(s) 5 to 8 hours earlier. Check how much IOB is active at bedtime.
- 6) Raise your breakfast CarbF or lower the basal rate(s) 5 to 8 hours earlier.
- 7) Raise your lunch CarbF or lower the basal rate(s) 5 to 8 hours earlier.
- 8) Raise your dinner CarbF or lower the basal rate(s) 5 to 8 hours earlier. .

### 13.9 Highs Before Breakfast



1. Already high at bedtime
2. Overnight basal too small or high fat or protein dinner
3. Dawn Phenomenon or insulin resistance
4. Overtreatment of night low

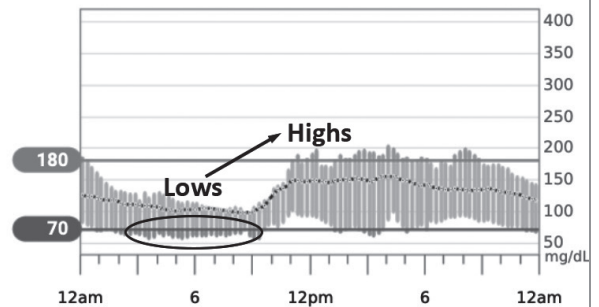
### 13.11 Post-Meal Spiking



1. Missed carb bolus
2. Carb bolus too small
3. Late carb bolus or high GI food

### 13.10 Lows to Highs

14 Days Wed 2023 - Tue 2023



#### Glucose

#### Average Glucose

127 mg/dL

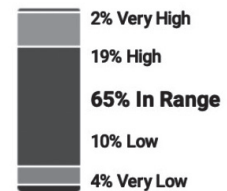
Standard Deviation

57 mg/dL

GMI

6.3%

#### Time in Range

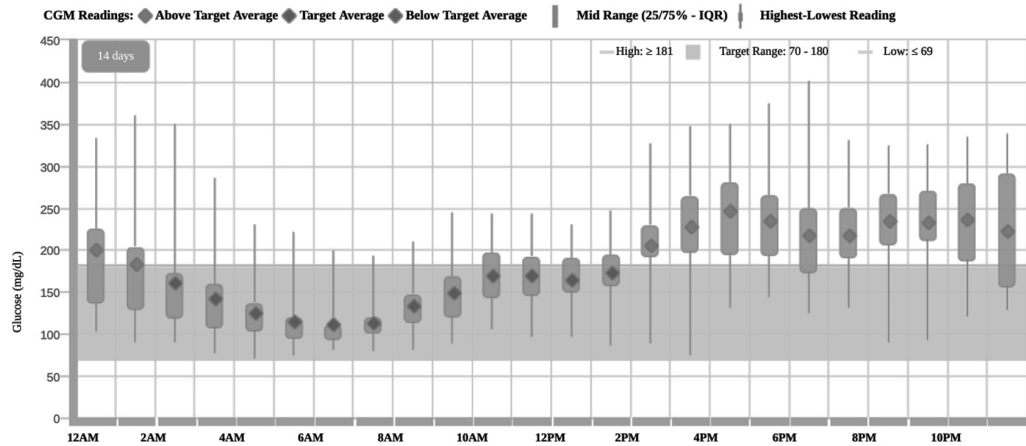


Target Range:  
70-180 mg/dL

This great average glucose comes at the price of an one hour (4%) a day below 54 mg/dL, and 2.5 hrs (10%) below 70 mg/dL a day. The excess GV of 45% ( $57 / 127$ ) dropped to 24% once the basal rate total was reduced from 38 u to 22 u a day. Their new average glucose was 145 mg/L, with only 2% below 70 mg/dL.

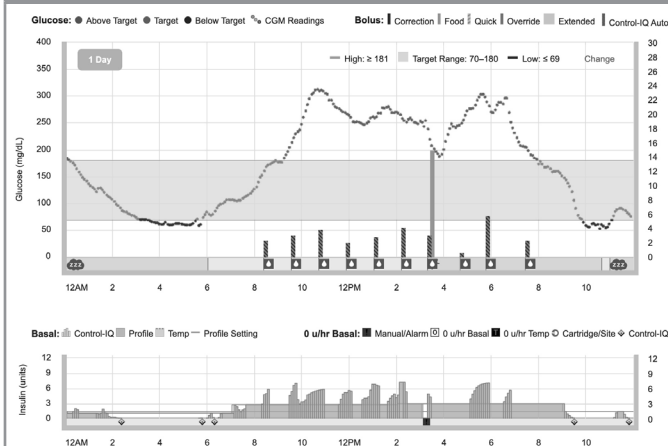
### 13.12 Highs from Missed or Inadequate Meal Boluses

CGM Hourly | Friday Jul 2022 - Thursday Jul 2022 CGM Data by Dexcom



Here the glucose rises after breakfast, lunch, and dinner on an AID system, largely from missed meal boluses. A smaller CorrF can shorten the peaks and durations of the rise, but remembering to bolus before all meals is a better solution.

### 13.13 High Glucose Following a Missed Bolus



After a mild low glucose at 3-5 am, this person skipped their breakfast bolus. Their high readings were over-treated, either because the CarbF number is too small (strong) or they increased the AID's recommended boluses.