CGM Data Analysis: Begin With Core Metrics

- Data sufficiency
- Glucose statistics
- Times-in-ranges metrics
CGM Data Analysis: Data Sufficiency

- Ideally 14 days of data
- >70% of data from 14 days

### AGP Report

#### GLUCOSE STATISTICS AND TARGETS

<table>
<thead>
<tr>
<th>Date Range</th>
<th>% Time CGM is Active</th>
</tr>
</thead>
<tbody>
<tr>
<td>26 Feb 2019 - 10 Mar 2019</td>
<td>99.9%</td>
</tr>
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**Glucose Ranges**

- **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 250 mg/dL**: Less than 5% (1h 12min)

Each 5% increase in time in range (70-180 mg/dL) is clinically beneficial.

- **Average Glucose**: 173 mg/dL
- **Glucose Management Indicator (GMI)**: 7.6%
- **Glucose Variability**: 49.5%

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

#### TIME IN RANGES

- **Very High** (>250 mg/dL): 20% (4h 48min)
- **High** (181-250 mg/dL): 23% (5h 31min)
- **Target Range** (70-180 mg/dL): 47% (11h 17min)
- **Low** (54-69 mg/dL): 4% (58min)
- **Very Low** (<54 mg/dL): 6% (1h 26min)
# CGM Data Analysis: Glucose Statistics

## Rapid assessment of glycemic variability

### AGP Report

<table>
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<tr>
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<td>(&gt;250 mg/dL)</td>
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<td>20% (4h 48min)</td>
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**Glucose Ranges**

- **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 250 mg/dL...Less than 5% (1h 12min)**

Each 5% increase in time in range (70-180 mg/dL) is clinically beneficial.

### Average Glucose

- **173 mg/dL**

### Glucose Management Indicator (GMI)

- **7.6%**

### Glucose Variability

- **49.5%**

*Defined as percent coefficient of variation (%CV); target ≤36%*
CGM Data Analysis: Time-in-Ranges Metrics

Aim for “More Green, Less Red”

AGP Report

GLUCOSE STATISTICS AND TARGETS

26 Feb 2019 - 10 Mar 2019
13 days
% Time CGM is Active
99.9%

Glucose Ranges

<table>
<thead>
<tr>
<th>Glucose Range</th>
<th>Target % of Readings (Time/Day)</th>
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<td>Target Range 70-180 mg/dL</td>
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TIME IN RANGES

- Very High (>250 mg/dL)……20% (4h 48min)
- High (181-250 mg/dL)……23% (5h 31min)
- Target Range (70-180 mg/dL)……47% (11h 17min)
- Low (54-69 mg/dL)……4% (58min)
- Very Low (<54 mg/dL)……6% (1h 26min)

TAR, Level 2
TAR, Level 1
Time in Range
TBR, Level 1
TBR, Level 2
Note Patient Factors That Affect AGP

Ask the patient: “What do you see in your AGP in terms of glucose patterns?”

Name, age, and weight
Type of diabetes
Medications (dose, timing)
Times for waking/bedtime
Times for meals/snacks
Exercise

Write notes on a printed copy of the AGP

Review Time in Range (TIR)

Is TIR at the patient’s individualized target based on age and comorbidities?

AGP Report

GLUCOSE STATISTICS AND TARGETS

26 Feb 2019 - 10 Mar 2019 13 days
% Time CGM is Active 99.9%

Glucose Ranges

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Average Glucose 173 mg/dL
Glucose Management Indicator (GMI) 7.6%
Glucose Variability 49.5%

Too Low!

Time in Range

- Very High (>250 mg/dL) 20% (4h 48min)
- High (181–250 mg/dL) 23% (5h 31min)
- Target Range (70–180 mg/dL) 47% (11h 17min)
- Low (54–89 mg/dL) 4% (58min)
- Very Low (<54 mg/dL) 6% (1h 26min)

Too Low!
# Review Time Below Range (TBR)

**Identify hypoglycemia**

## AGP Report

### Glucose Statistics and Targets

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<th>Time CGM Active</th>
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**Glucose Ranges**
- Below 70 mg/dL: Less than 4% (58 min)
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**Average Glucose**
- 173 mg/dL

**Glucose Management Indicator (GMI)**
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**Target Range**
- 70-180 mg/dL: 47% (11h 17 min)

## Time in Ranges

- **Very High** (>250 mg/dL): 20% (4h 48min)
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- **Low** (54-89 mg/dL): 4% (68min)
- **Very Low** (<54 mg/dL): 6% (1h 26min)

**Too High!**

**TBR, Level 1**

**TBR, Level 2**
Review Time Below Range (TBR)

Look for trends or patterns of hypoglycemia and when the greatest glycemic variability is occurring.
Review Time Above Range (TAR)

Quantify Level 1 and Level 2 hyperglycemia

Look for patterns of high glucose levels

AGP Report

GLUCOSE STATISTICS AND TARGETS

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Name
MRN

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Too High!

TAR, Level 2

TAR, Level 1
6 Use the AGP to Identify Patterns of High Glucose Variability (GV)

How much of the data falls within the target range?
Are there specific times of day with greater variability?
GV is about **timing** or **amount**
- Timing: insulin and meals; weekday/weekend; snacks, exercise, stress
- Amount: insulin; insulin:carb ratio; exercise intensity

Discuss with patient what might be contributing to wide variability in glucose levels

**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.
Refer to Previous CGM Data and AGP

- How do current patterns compare with previous results?
- Note patterns that have improved and patterns to work on
- Reinforce successful strategies and positive improvements
- Solicit ideas for further improvements
- Reminders about targets
Develop an Action Plan

- Use shared decision-making
- Always treat hypoglycemia first
- Encourage lifestyle changes in addition to medication adjustments
Document the Patient Visit

- Give the patient a copy of the AGP report with written notes
- Provide the patient with a copy of the Action Plan
- Confirm understanding of the follow-up plan of when to call the diabetes care team if concerns arise
- Scan or snip AGP Report into patient’s EMR
