

Sick day Management



What will you learn ?

- ✓ What to do when your child is sick
- ✓ How illness may affect your child's blood sugar control
- ✓ What ketones are and when to test
- ✓ How to manage your child's fluid needs
- ✓ When and how to communicate with the diabetes team and/or primary care provider
- ✓ Signs of Depression
- ✓ Organizations to use for information

Knowing your child is sick

- Signs and symptoms of illness are fever, vomiting, diarrhea, severe headache, earache, sore throat, coughing, sneezing or injury
- Observe your child's behavior. Is your child as active as usual? How interested is your child in play or usual activities? Are your child's sleep habits being interrupted by symptoms of underlying illness?

Supplies to have on hand

- Urine keto-stix test strips
- Glucagon emergency kit (Set expiration date reminders in your cell phone)
- Extra blood sugar test strips
- Fluids with and without sugar



How blood sugars are affected during illness

- Blood sugars may be either high or low and may respond differently with each illness
- Do not rely on sensor readings if glucose is above or below normal range
- Young children do not have the ability to store much glucose in the body; blood sugars may run low during illness
- During illness stress hormones may make the blood sugar rise
- **If blood sugar is elevated:** Check blood sugar every 2-3 hours, give correction boluses and check for ketones. *Remember do not give correction boluses any closer than every 2 hours.*
- **If blood sugar is below 70:** follow the 'Rule of 15' and check for ketones. *If child is not able to tolerate fluids, give 1 unit of glucagon for every year of age (example: child is 8 years old, give 8 units of glucagon).*
- Your child needs insulin every day to use sugar in blood even when unable to eat.

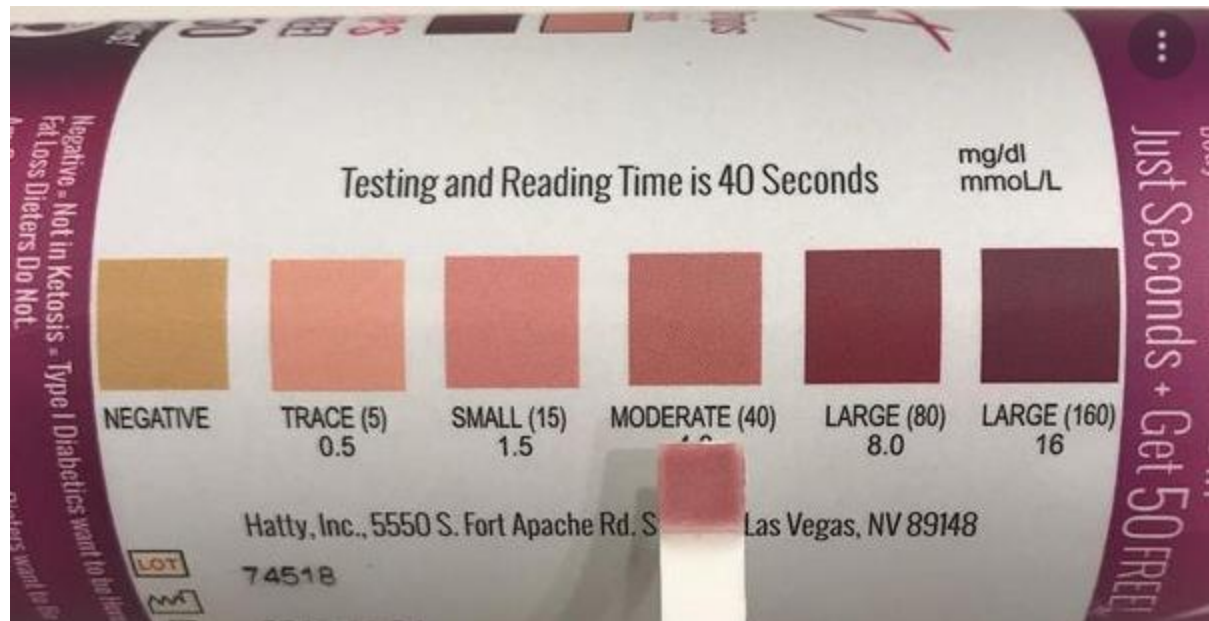
Understanding ketones



- Ketones are present in the urine and blood when there is not enough insulin present
- Ketones are acids made when fat is burned for energy instead of sugar (ketosis)
- Ketones may cause vomiting and /or abdominal pain
- Ketones may be managed at home with frequent telephone contact with the diabetes team
- Diabetic Ketoacidosis (DKA) always requires treatment at a hospital
- Diabetic Ketoacidosis (DKA) can occur in a few hours or over several days
- Insulin stops ketone production and increasing fluids help clear them from the body
- An increase in insulin may be needed if ketones are moderate or large. Please refer to chart for dosing suggestions.

When to check for ketones

- 2 blood sugars in a row over 240 mg/dL
- At first sign of illness
- If your child wears diapers, a cotton ball in the diaper will absorb urine for testing



How much fluid does my child need?

- Your child may prefer to drink rather than eat while sick
- Your child will need at least 4 ounces of liquid every hour while awake
- More fluids are needed if your child has a fever, diarrhea, ketones, or is vomiting
- Fluids may be tolerated best if offered in small and frequent sips or through a straw
- After vomiting, offer sips of fluids, ice chips, or Popsicle® pieces
- Your child's mouth should be shiny and moist. A dry tongue or cracked lips are signs of dehydration as well as dark circles around eyes or eyes that appear sunken

Fluids

If blood sugar is **less than 150**, give

Fluids containing sugar

Clear, flat soda such as
7-up, ginger-ale, sprite
Popsicle
Regular Jell-O®
Juice
Kool-Aid®
Gatorade®

If blood sugar is **more than 150**, give

Sugar-Free Fluids

Water or ice chips
Flat diet soda
Sugar free Popsicle
Chicken broth
Sugar-free Jell-O®
Crystal Light® products
PowerAde Zero
Pedialyte-sugar free



If your child is sick, check blood glucose and ketones

Blood sugar	Treatment	Insulin Doses
<70 mg/dl	Treat hypoglycemia with 15 gm fast acting carbohydrates	
70-150 mg/dl	Push carbohydrate containing fluids	Hold carbohydrate coverage. Give correction if above target.
>150	Push carbohydrate free fluids	Cover carbohydrates and correct blood sugar every 2-3 hours

Ketones Results

Ketones	Fluids	Correction doses
Ketones negative	Encourage fluids	Give correction dose every 2-3 hours for high blood sugars
Ketones= trace-small	Encourage fluids (4-6 oz/hour)	Give correction dose every 2-3 hours for high blood sugars
Ketones= moderate	Encourage fluids (at least 4-6 oz/hour), more if tolerated	Add 10% extra to correction doses. Give correction doses every 2-3 hours for high blood sugars.
Ketones= large	Encourage fluids (at least 4-6 oz/hour), more if tolerated	Add 20% extra to correction doses. Give correction doses every 2 hours for high blood sugars.

When to call with the diabetes team:

- Call if your child vomits twice
- Call if ketones (moderate, large) are present
- Call if your child refuses to drink fluid and is sick and/or has ketones
- Call to discuss your child's insulin needs
- Call if concerned about dehydration (dry tongue or cracked lips)
- Call if unable to bring up a low blood sugar despite treatment with sugar

Call the diabetes center if there are other signs of diabetes ketoacidosis (DKA) besides nausea/vomiting. ***If you see any changes in breathing such as very deep and/or rapid breathing, call 911 immediately***



Who and when to call

Hospital

- Continual vomiting
- Signs of dehydration such as dry tongue or cracked lips, dark circles around eyes or eyes appear sunken, decreased urination
- Large or increasing ketones that are not reversing despite attempts
- Signs of DKA (Diabetes ketoacidosis) such as severe abdominal pain, fruity-smelling breath

911

- ❖ deep and/or rapid breathing or difficulty breathing

Pediatrician

- When your child has a fever or infection
- When your child has a condition not related to their diabetes

Over the Counter Medications:

- Illness can often increase blood sugar levels.
- Most over the counter medications have little or no effect on blood sugar. Use as directed on the package. Cough syrups, decongestants and lozenges may contain sugar and potentially increase glucose level. High glucose levels during illness are much more impacted by the illness itself rather than these medications.
- Asthma medications and oral steroids may also increase glucose level. Give correction doses as prescribed and call the diabetes team if blood sugars remain high.

Other recommendations:

- The American Diabetes Association along with your physician recommends:
- Influenza or 'flu' vaccine
- Pneumococcal vaccine- PCV13 for children < 2 years old
- PPSV23 for children 2 years and older



Depression

Watch for signs of depression:

- Misbehavior or acting out
- Anger
- Social Isolation
- Poor school performance
- Fatigue
- Thoughts of suicide

Nemours does have a licensed clinical social worker who will be glad to meet with you and your child. 904-697-3031

What would you do?

- 1) It is 3AM. Your child wakes up vomiting. What is the 1st thing you should do?
- A. Call diabetes team
 - B. Check blood sugar and ketones in urine
 - C. Check the temperature
 - D. Call the primary care physician



- 1) Your child's blood sugar is 90 and ketones are moderate. What should you do?
 - A. Nothing because the blood sugar is in target range
 - B. Encourage sugar free fluids
 - C. Give sugar containing fluids and insulin as soon as the glucose level rises high enough

3) Your child has vomited a third time. You spoke with the diabetes team 2 hours ago. The current blood glucose is 100 and ketones have increased too large. What do you do?



Trend Management



What about you/your child?

Do you know when and how to change your base doses of insulin?

What will you/your child learn?

When and how to change your base dosage of insulin.

Make sure you also consider other factors that could be affecting your blood sugar when making insulin adjustments, such as: changes in food intake, exercise or activity level, illness, stress, growth and developmental changes.

- First step: understand the times of action of the insulin.

Glargine's-Basaglar/Lantus/Semglee/Rezvoglar & Levemir/Tresiba:

1. Takes approximately 2-3 hours to take effect once given at bedtime
2. There is no peak
3. Works for approximately 24 hours

-Admelog/Novolog/Humalog:

1. Starts working in 5-15 minutes after administration.
2. Peaks in one hour
3. Works for approximately 2-3 hours

- **Reducing insulin doses to prevent low blood sugars** – If the blood sugars have been below your target range, either all day or at a specific time of day for 2-3 days in a row, the insulin dose should be decreased. Think about what time of day the low blood sugars are occurring and which insulin is acting at that time. You will want to reduce the base dose of the insulin that is working at that time of day by 10-20%.

- **Increasing insulin doses to prevent high blood sugar** - If the blood sugars have been above your target range for 3-4 days in a row, the insulin dose should be increased. Think about what time of day the high blood sugars are occurring and which insulin is acting at that time. You will want to increase the base dose of insulin that is working at that time of day by 10-20%.

- If blood sugars are still below or above your target range for 3 days after the initial dose change, repeat the increase or decrease in base doses of insulin once again. If you are not sure whether or not to continue making further insulin dose changes, contact your diabetes care provider.

Scenario #1

Your insulin regimen:

Basal Insulin: ___ Lantus **20** units _____

NovoLog I/C ratio: **1:10** _____, HGB: **1:25 > 100** _____

Blood glucose log book

Breakfast 8 a.m.	Mid-morning 10 a.m.	Lunch 12 p.m.	Mid afternoon 3 p.m.	Dinner 6 p.m.	Bedtime 9 p.m.
275	130	125	220	133	140
204		118	195	101	110
199	97	80	207	112	125
221		98	186	90	138

What pattern do you see? _____

Do you feel that there needs to be an insulin adjustment? _____

If so, which insulin would you change and by how much? _____

Scenario #2

Your insulin regimen:

Basal Insulin: ___ Lantus **20** units at night _____

NovoLog: I/C ratio: ___ **1:10** _____, HGB: ___ **1:25 > 100** _____

Breakfast 8 a.m.	Mid-morning 10 a.m.	Lunch 12 p.m.	Mid afternoon 3 p.m.	Dinner 6 p.m.	Bedtime 9 p.m.
99	141	65		130	82
104		72	122	90	80
125	113	61		94	78
131		68	130	102	90

What patterns do you see? _____

Do you feel that there needs to be an insulin adjustment? _____

If so, which insulin would you change and by how much? _____

Reading Dexcom Clarity Reports

Reports

Overview

Patterns

Trends

Overlay

Daily

Compare

Statistics

AGP

Patient Glucose Ranges

Average Glucose

152 mg/dL

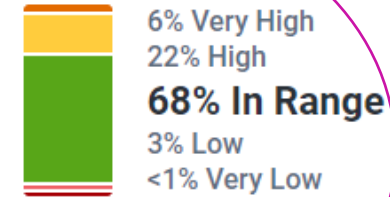
Standard Deviation

56 mg/dL

GMI

N/A

Time in Range



Target Range:

70-180 mg/dL

Sensor Usage

Days with CGM data

86%

6/7

Avg. calibrations per day

0.0

**We found 1 pattern during this date range.
The best day was September 28, 2021.**

1



had a pattern of daytime highs

had a pattern of significant highs between 8:50 AM and 9:30 AM.

4 high events contributed to this pattern. None of the contributing events were rebound highs.



Patterns

Reports

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Patient Glucose Ranges

**We found 1 pattern during this date range.
The best day was September 28, 2021.**

① Daytime Highs

② Best Day

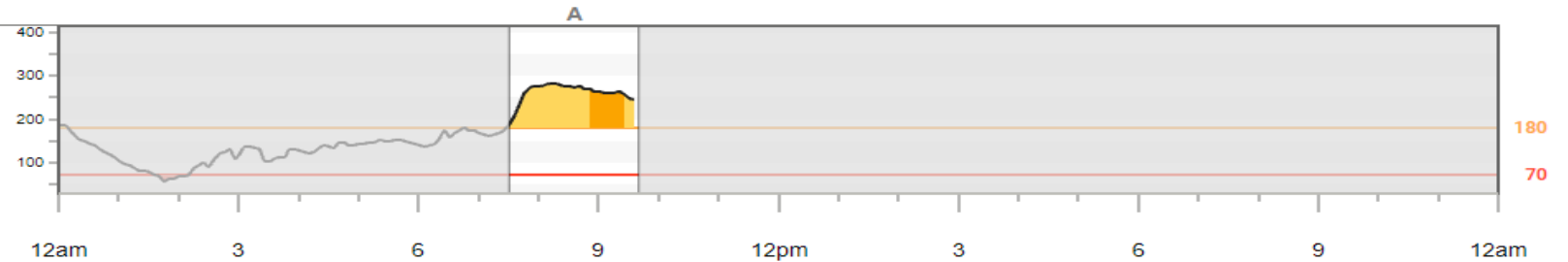
① **had a pattern of daytime highs**

had a pattern of significant highs between 8:50 AM and 9:30 AM.
4 high events contributed to this pattern. None of the contributing events were rebound highs.

Thu, Sep 30, 2021

Glucose
(mg/dL)

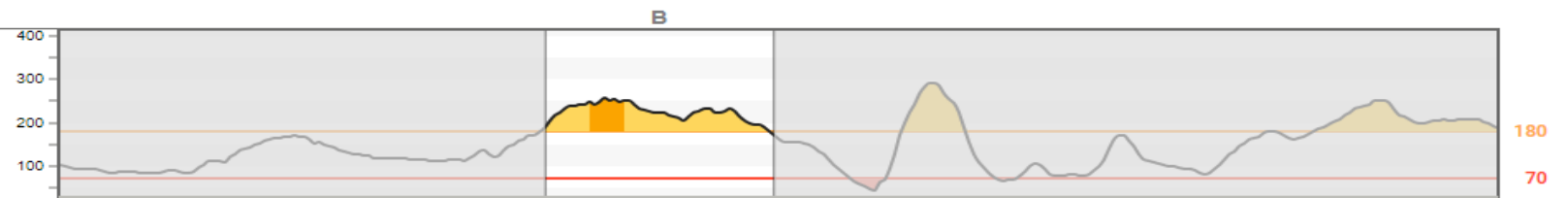
A: 7:30 AM-9:40 AM



Wed, Sep 29, 2021

Glucose
(mg/dL)

B: 8:05 AM-11:55 AM



Daily View

Daily

Compare

Statistics

AGP

Patient Glucose Ranges



CGM



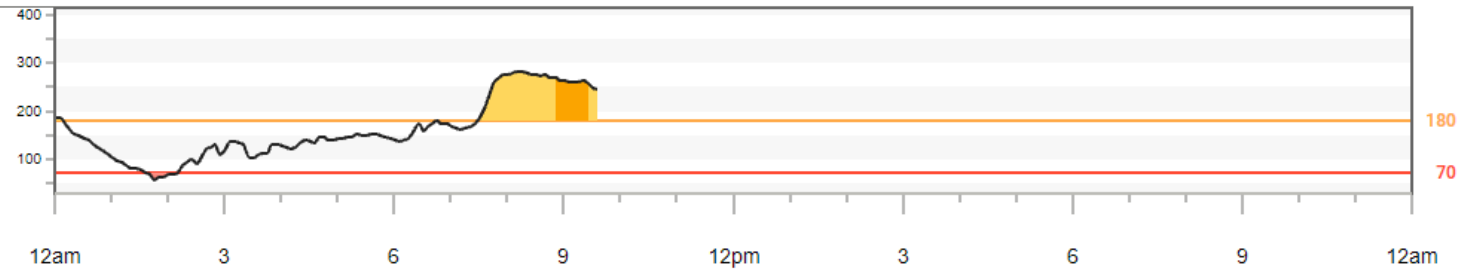
Calibrations



Alerts

Thu, Sep 30, 2021

Glucose
(mg/dL)



1:36 AM
Low

1:41 AM
Urgent Low Soon

2:05 AM
Low

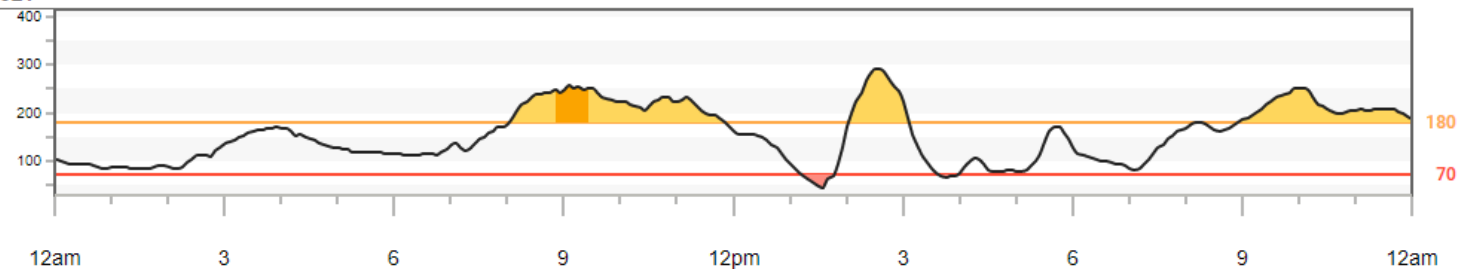
7:46 AM
Rise Rate

7:46 AM
High

8:21 AM
High

Wed, Sep 29, 2021

Glucose
(mg/dL)



9:25 AM

1:10 PM

1:25 PM

1:45 PM

Reports

Overview

Patterns

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Overlay

Daily

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Statistics

AGP

Patient Glucose Ranges

dexcom

captur**AGP**® ?

AGP

Glucose Statistics

Avg Glucose
mg/dL

151

Glucose Exposure

Very Low

< 54 mg/dL

1.2%

Low

< 70 mg/dL

3.3%

In Target Range

70 - 180 mg/dL

69.4%

Glucose Ranges

High

> 180 mg/dL

27.3%

Very High

> 250 mg/dL

4.0%

Coefficient of
Variation

34.8%

Glucose Variability

SD
mg/dL

52

% Time CGM
Active

90.5%

Data Sufficiency

CGM

50% - Median

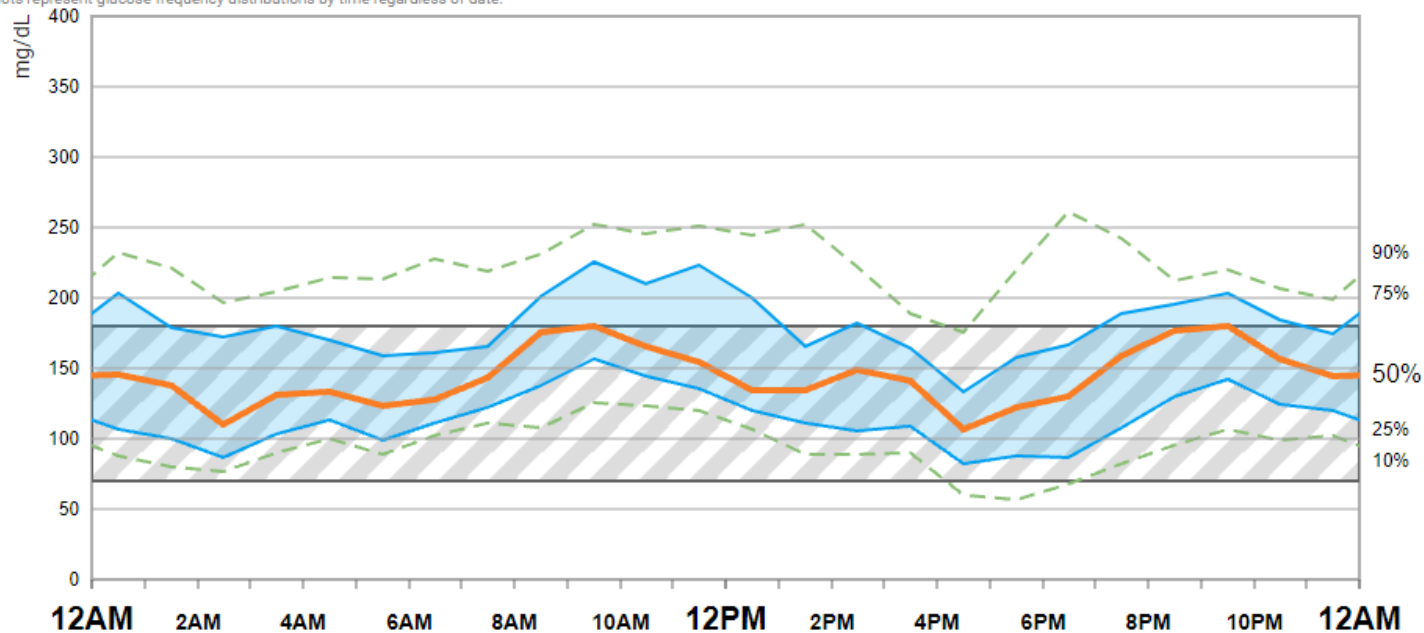
25/75% - IQR

10/90%

Target Range

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

Ambulatory Glucose Profile



ucose Profile
Sep 2021

The Y axis and target range are the same as on the Ambulatory Glucose Profile graph above.

Monday

Tuesday

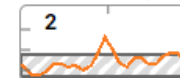
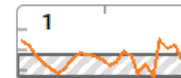
Wednesday

Thursday

Friday

Saturday

Sunday



Empowering you to take control

- You got this!
- We are here to back you up if you get stuck.
- 10% changes and wait 3-4 days for patterns

