

high and low blood sugars

high blood sugar

hyperglycemia/diabetic ketoacidosis

Problems that come with high blood sugar occur more slowly than those of low blood sugar.

causes of high blood sugar

- Too much food
- Missed insulin injection or not enough insulin
- Being sick with an infection or increased stress
- Being inactive
- Growth

early symptoms

- A blood sugar above the target range
- Increased thirst
- Increased urination
- Hunger
- Decreased energy
- Blurred vision
- Headache
- Stomachache

An occasional high blood sugar is treatable with the appropriate insulin dose. If the high blood sugar is not treated and these symptoms are ignored, it can worsen. Having higher blood sugar increases the risk of developing ketones. This can make a child feel very sick. It can also put them at risk for developing **diabetic ketoacidosis (DKA)**. **DKA results when high blood sugars and ketones have accumulated, resulting in an imbalance of body water and electrolytes. DKA is a medical emergency and needs to be treated by your physician. DKA can result in a coma or even death.**

symptoms of ketoacidosis include

- Moderate to large ketones
- Dehydration
- “Fruity” odor to breath
- Deep, rapid respirations (difficult or labored breathing)
- Lethargy/fatigue
- Vomiting

what to do when your child has symptoms of high blood sugar

1. First check the blood sugar.
2. If the blood sugar is above 300, check for ketones. If the ketones are moderate or large, call the diabetes nurses or physician. Or, give blood sugar and ketone correction if you already have a ketone correction scale. When in doubt, call.
 - If Monday through Friday, 8:00 am–5:00 pm, call 937-641-3487
 - If after 5:00 pm or on a weekend or holiday, call 937-641-3000 to have the physician paged.
 - The office is closed after hours and on the weekend.

Note: Do not leave a message on the office voicemail.

3. If the ketones are negative, then SAI can be given to correct for high blood sugar. SAI can be given every 2–3 hours. Use your blood sugar correction scale to determine the dose.
 - Example: If the lunch insulin was given at 12:00 pm, you could give SAI at 2:00 pm or after to correct for the high blood sugar.
4. Before correcting for a high blood sugar, think about your child’s activity level after the insulin will be given.
 - If active, a reduced dose may be more appropriate. Remember insulin and activity both lower blood sugar.
 - If your child is ill and inactive due to the illness, remember that illness and inactivity both can cause higher blood sugars. You should give the correction at this time.
 - **Note:** Your physician may change these guidelines as you become more experienced with your child’s care.

low blood sugar or hypoglycemia

If your child’s blood sugar drops below the target range, he/she may have the symptoms of low blood sugar. This is also called hypoglycemia. The body and brain do not work well without the needed sugar. **For children, a blood sugar less than 80 any time during the day is considered a low blood sugar.**

causes of low blood sugar

- The honeymoon period (referenced in the “What is diabetes?” section of this manual)
- Too much insulin
- Exercise/increase in activity
- Vomiting/diarrhea
- Drinking alcohol

When sugar levels drop, signals are sent out that more sugar is needed.

early symptoms include:

- Paleness
- Shakiness
- Sweating
- Irritability
- Mood changes
- Headache
- Hunger
- Nightmares

later, more serious symptoms are:

- Confusion
- Unconsciousness
- Seizure



treatment of low blood sugar

1. If your child is having symptoms of low blood sugar, check the blood immediately. Do not leave a child with a low blood sugar alone!
 - If a monitor is not available, treat the symptoms and recheck the blood sugar as soon as possible. This is not ideal as a glucose meter should be readily available at all times
2. Treat with 15 grams of a quick-acting carbohydrates (carbs). In younger children, we may recommend that 8-10 grams of carbs be used.
3. Sources of quick acting carbs include (15 grams of carbs):
 - ½ cup fruit juice
 - Small pack of fruit snacks (check label for carbs)
 - 3-4 glucose tabs
 - A fun size pack of Skittles® (23 Skittles)
 - 8 Lifesavers®
 - ½ cup regular soft drink
 - 1 tablespoon honey or Karo® syrup
4. Recheck the blood sugar 15 minutes after treatment is given. This is known as the 15-15 rule: 15 grams treatment with recheck in 15 minutes. If it is still less than 80, treat again.
5. If the low occurs at a scheduled mealtime, give the quick acting carbs and then allow your child to eat their meal. Do not add the treatment carbs to the total carbs eaten for the meal.
 - Example: Blood sugar before lunch = 64
 - o 4 oz juice (15 grams of carbs for treatment of low)
 - o Carbs from rest of lunch = 50 grams
 - Dose of insulin is only given for 50 grams. The 15 grams of carbs from the juice is strictly to treat the low blood sugar. If you gave insulin for the total amount of carbs (65 instead of 50 grams), this could cause the blood sugar to drop too low again.
6. If the low blood sugar occurred at a mealtime, you do not need to recheck the blood sugar unless your child is still showing symptoms for low blood sugar.

treatment of low blood sugar at bedtime

blood sugar at bedtime check	number of extra carbs
Less than 100 (between 80 and 99)	15 grams
Less than 80	30 grams

Recheck blood sugar in 30 minutes, and again in two hours to ensure that the blood sugar is over 100 before leaving the child alone for the night.

If you have to treat low blood sugar frequently, call in the blood sugars for review. We may adjust your child's insulin dose.

severe low blood sugar

Late signs of low blood sugar are decreased coordination and eventually, a loss of consciousness. Treatment is needed immediately.

glucose gel

Glucose gel should be given if your child is awake but “spacey” or uncoordinated, and you are not certain they could safely drink juice.

- Twist the cap off and squirt a small amount of gel inside the jaw.
- Keep giving small amounts of gel until your child has improved coordination and/or is able to speak.

glucagon

If you should find your child asleep and are unable to wake him/her, their blood sugar may be severely low. Treatment should begin immediately!

what is glucagon?

Glucagon is a hormone that causes the liver to release a quick burst of sugar. Glucagon is given by injection to the unconscious person with low blood sugar as an “extra boost” to help raise the blood sugar.

instructions for glucagon emergency kit

1. Flip the plastic cap off the vial in the kit.
Wipe off the bottle top with an alcohol pad.
2. Inject all the liquid in the syringe into the vial.
Tilt the vial back and forth until the glucagon is dissolved. Swirl the vial in a circle.
 - a. **Note: Do not shake!**
3. For children weighing 44 pounds or more, give all the glucagon. For children less than 44 pounds, give $\frac{1}{2}$ the solution.
4. Withdraw the solution from the vial into the syringe.
5. Using an alcohol pad, wipe off the skin where the injection is to be given. The arms or legs are the easiest sites.
6. Stick the needle straight in all the way.
7. As soon as you give the child the injection, place them on their side and call 911! When an unconscious person awakens, he/she may vomit. Turning the child on their side will help prevent them from choking.
8. As soon as the child is awake, they should start drinking some liquids that contain sugar.



Remember, never put food or juice into an unconscious person's mouth. They can choke. In this case, an injection of glucagon will be needed to raise the blood sugar

