Low Blood Sugars
Low Blood Sugar

Any blood sugar that is less than 4 mmol is too low. The aim is to find the amount of insulin that will balance the carbs and activity. The correct amount of insulin should also bring the level of blood sugar close to the target control range, most of the time.

Sometimes the blood sugar level can go too low.

Most children with well-controlled diabetes will have mild low blood sugar two to three times per week on the average.

Signals of Low Blood Sugar

<table>
<thead>
<tr>
<th>Early Signals</th>
<th>Later Signals</th>
</tr>
</thead>
<tbody>
<tr>
<td>. shaking</td>
<td>. numbness or tingling of lips</td>
</tr>
<tr>
<td>. sweating</td>
<td>. lack of concentration</td>
</tr>
<tr>
<td>. weakness</td>
<td>. confusion</td>
</tr>
<tr>
<td>. dizziness</td>
<td>. unconsciousness (if treatment is delayed,</td>
</tr>
<tr>
<td>. nervousness</td>
<td>&amp; the reaction is severe)</td>
</tr>
<tr>
<td>. rapid heart beat</td>
<td></td>
</tr>
<tr>
<td>. headache</td>
<td></td>
</tr>
<tr>
<td>. hunger</td>
<td></td>
</tr>
<tr>
<td>. blurred vision</td>
<td></td>
</tr>
</tbody>
</table>

Depending on the age, your child may not be able to tell you how he feels. For younger children, behavior changes are the common signal of low blood sugar.

Your child may experience one or several of these signals. With experience, both you and your child will learn the earliest signals.
Are There Signals That Others Can See?

Those around may notice:
→ paleness
→ sweating
→ a change in behavior – irritability or a withdrawn silence
→ thick and slurred speech
→ clumsy or unsteady movements

Some children will describe themselves as being very hungry or suddenly tired. Others, especially younger children, will say they have a sore tummy. If the low sugar has happened during the night, the child may wake up with a bad dream or have a headache in the morning.

Commonly, high blood sugar can feel like low blood sugar. It is important to check sugar at the time to verify.

How to Treat Low Blood Sugar

Low blood sugar needs to be treated right away. Treat immediately with fast acting sugar. If you ignore the signals, your child may become confused. He may then be unable to recognize what is happening and unable to do anything about it. Loss of consciousness could occur. Fortunately, very simple measures will treat low sugar successfully in the early stages.

Your child will need to pay attention to the signals of low blood sugar as soon as he notices them. This may mean stopping during a game or a gym class to check blood sugar and treat. He cannot wait until the next meal or snack to fix up the low blood sugar.

→ If lows are happening often, insulin should be reduced prior to the activity. Talk to your Diabetes Team.
If the **low blood sugar happens during the night**, your child should:

→ treat the low blood sugar immediately using a fast-acting carbohydrate.

and ... AFTER 10 MINUTES ...

→ eat some starchy food 15 gms carbohydrate to maintain the blood sugar level and prevent another low sugar.

**This extra food is not counted in the carb targets.**

**Should we carry fast acting carbs?**

**ALWAYS** have something readily available at the school or sports event for treating low blood sugar.

Discuss the pamphlet *“Standards of care for Students with Diabetes in School”* with school teachers or coaches.
# Treating Low Blood Sugars

Less than 4 mmol require different treatments at different stages. Check blood sugar to confirm the symptoms and treatment.

<table>
<thead>
<tr>
<th>SIGNS</th>
<th>STAGE 1</th>
<th>STAGE 2</th>
<th>STAGE 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYMPTOMS</td>
<td>Sweating</td>
<td>Irritability</td>
<td>Unconsciousness</td>
</tr>
<tr>
<td></td>
<td>Shaking</td>
<td>Blurred/double vision</td>
<td>Possible</td>
</tr>
<tr>
<td></td>
<td>Palpitations</td>
<td>Confusion</td>
<td>convulsions/seizures</td>
</tr>
<tr>
<td></td>
<td>Hunger</td>
<td>Poor coordination</td>
<td>Alcohol</td>
</tr>
<tr>
<td></td>
<td>Pallor</td>
<td>Staggering</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sense of Anxiety</td>
<td>Mood change</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Headache</td>
<td>Yawning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mood Changes</td>
<td>Headache</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nightmares (if sleeping)</td>
<td>Fatigue</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LEVEL OF AWARENESS IN CHILD</th>
<th>STAGE 1</th>
<th>STAGE 2</th>
<th>STAGE 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Able to identify and treat symptoms by self if child is old enough (Parents to identify in young child)</td>
<td></td>
<td>Aware of increasing symptoms. Older children can treat self or accept help. May need help if irrational or confused.</td>
<td>Unable to treat self. Requires emergency help.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TREATMENT</th>
<th>STAGE 1</th>
<th>STAGE 2</th>
<th>STAGE 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 gms of fast acting carbohydrate.</td>
<td>➢ 2½ Dex4 tablets</td>
<td>➢ 2½ Dex4 tablets</td>
<td>➢ May choke if fluids forced.</td>
</tr>
<tr>
<td></td>
<td>➢ 1½ Rocket rolls</td>
<td>➢ 1½ Rocket rolls</td>
<td>➢ Use Glucagon injection (Emergency Kit). Then give sugar as in Stage 2 when child is conscious. Give food as soon as possible after responding. Take directly to hospital if you are not seeing a return to consciousness.</td>
</tr>
<tr>
<td></td>
<td>➢ 10 Skittles</td>
<td>➢ 10 Skittles</td>
<td>➢ If no Glucagon available or has expired (check regularly), call ambulance (911). Go to nearest hospital.</td>
</tr>
<tr>
<td></td>
<td>➢ 2 sugar cubes or 2 teaspoons of sugar</td>
<td>➢ 2 sugar cubes or 2 teaspoons of sugar</td>
<td></td>
</tr>
<tr>
<td></td>
<td>➢ 4 LifeSavers (chewed quickly and swallowed)</td>
<td>➢ 4 LifeSavers (chewed quickly and swallowed)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>➢ 125ml of a regular soft drink</td>
<td>➢ 3 Dextro-Energy Tablets</td>
<td></td>
</tr>
<tr>
<td></td>
<td>➢ 2 teaspoons of honey or corn syrup</td>
<td>➢ 125ml of a regular soft drink</td>
<td></td>
</tr>
<tr>
<td></td>
<td>➢ 125ml unsweetened orange juice</td>
<td>➢ 2 teaspoons of honey or corn syrup</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>➢ 125ml unsweetened orange juice</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PREVENTION</th>
<th>STAGE 1</th>
<th>STAGE 2</th>
<th>STAGE 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure insulin accurately. Supervise child</td>
<td>Teach family / friends how to help child. Teach child to accept help. Carry ‘fasting-acting’ sugar with you. Plan ahead for extra activity or “late meals”. Only give meal time rapid insulin when food is being served</td>
<td>Don’t postpone early treatment. Never miss a meal when insulin has been given. Careful attention to measuring insulin. Contact doctor if several low blood sugars occur with no known reason.</td>
<td></td>
</tr>
<tr>
<td>Meals, snacks on time. Extra carbs for extra exercise, (10 gms carbo), every ⅓ hour of activity. Learn to recognize the early signals. Carry ‘fast-acting’ sugar.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Can We Use Chocolate Bars to Treat Low Blood Sugar?

Chocolate bars contain fat and are digested too slowly. They are not effective in raising blood sugar quickly enough.

What Can Cause Low Blood Sugar?

1. **Late Meals or Snacks**
   Injected insulin works all the time and needs carbohydrate to balance its action. Usually a delay of ½ hour for a meal or snack is safe. You can handle a longer delay, up to one hour, by giving 15 grams carbohydrate at the regular meal time. Omit this 15 gms from the total carb target when the rest of the meal is eaten.

2. **Missed Food**
   The meal plan shows what the carb target is for each meal and snack. It is important for your child to eat all of the carbohydrate shown for a particular meal or snack. If your child frequently cannot eat to prevent low blood sugar, your child may need the insulin dosage changed. Gradually, you learn how to adjust the insulin to be flexible with amount of carbohydrate to the carb target, the insulin and target can be reduced.

3. **Sleep Ins**
   If your child sleeps in, insulin will continue to work to lower blood sugar. Blood sugar tends to be lowest when a person has not eaten for a long time, such as overnight. So, if your child sleeps in, he may be at risk of having a low blood sugar.
   Older children may find their blood sugars rise the longer they sleep in – the insulin is wearing off. Most children can sleep in for one hour without blood sugars changing. Some children are more sensitive. When the diabetes is in good control, some children find they can only sleep in about ½ hour without blood sugar being affected.. It is possible to get up close to the normal injection time, take insulin, eat breakfast and then go back to bed.
   During longer school breaks, the time of the insulin injection can be moved later. Talk to the Diabetes Team about this.

4. **Extra Exercise Without Extra Carbohydrate**
   Because exercise burns blood sugar, your child will need extra carbohydrate for extra exercise.
For guidelines on how much extra food is required for extra activity, see activity chapter

5. **Measurement Error**
   If your child takes too much insulin in error, a low blood sugar may occur. If too much insulin is taken by mistake, check the blood sugar more frequently and call your diabetes team or family doctor for advice.

6. **Insulin Dose Too High**
   Children with well-controlled diabetes experience mild low blood sugar 2-3 times per week. These are usually explained by changes in activity or carbs. If there are low blood sugars which you cannot explain by increased activity or decreased / delayed carbs, it may mean that the amount of insulin is too high. Reduce the insulin dose if there is a persistent problem of low sugars **without a reason**. Since different insulins work at different times during the day, know when the low sugars occur. Record the time of the low blood sugars. This is the only way you can decide which insulin needs to be decreased.

   The goal of diabetes care is to gradually learn how to adjust the insulin doses. To do this, a good working knowledge of the times of action of the different insulins and some experience are necessary. Do not expect to learn this skill right away.

   The chart below gives directions on how to decrease the insulin if your child is having **unexplained** low blood sugars. Have your doctor or diabetes educator help you fill it out so you may use it in the future.

<table>
<thead>
<tr>
<th>LOW BLOOD SUGAR HAPPENS</th>
<th>INSULIN TO BE DECREASED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast to Noon</td>
<td>Decrease by units</td>
</tr>
<tr>
<td>Noon to Supper</td>
<td>Decrease by units</td>
</tr>
<tr>
<td>Supper to Bedtime</td>
<td>Decrease by units</td>
</tr>
<tr>
<td>Bedtime to Breakfast</td>
<td>Decrease by units</td>
</tr>
</tbody>
</table>

When you leave the hospital, you will be in frequent telephone contact with someone from the Diabetes Team to help you make the insulin dose changes. Eventually, you will start taking on this responsibility. Someone from the Diabetes Team will be guiding you through the Honeymoon period.
7. **Honeymoon Period**

Many children with newly-diagnosed diabetes have a temporary “honeymoon” or partial remission phase. It means that for a short time your child may need less insulin than when first diagnosed. This happens for most children, and is strongest between 2-6 months after diagnosis. It may last up to a year or longer. This can give the impression that the diabetes is going away!

Taking insulin by injection can help the pancreas to recover from the stress of the high blood sugar and it may still be able to make some insulin. If this happens, it will be in the first few months after the diagnosis.

The ability of the pancreas to make this added insulin is temporary. The Diabetes Team will help you decide if the “honeymoon” is happening and how to adjust the insulin dose. The honeymoon phase will gradually end and insulin requirements will slowly increase, which is the natural course of the disease. It doesn’t mean that the diabetes is worsening!

You can expect that the first two or three months after the diagnosis of diabetes will be a time of change. The change takes many forms, both physical and emotional. There will be some unexplained ups and downs in the blood sugar levels. Although frustrating at times, **this is normal.**

8. **Alcohol Beverages**

   Drinking alcohol particularly after being active, and using high alcohol content choices is known to cause low blood sugar.  
   Ask your Diabetes team for safe drinking “rules”

**What if I’m Not Sure Whether the Blood Sugar Is Low?**

If you think your child is having low blood sugar, but aren’t sure, check the blood sugar. Sometimes the signals of low blood sugar are vague and you or your child may not have the experience to notice them. Checking the blood sugar will tell for sure. This also assists you and your child to know which signals they experience.

If the blood sugar is less than 4 mmol/L, give some fast acting carbs. Do this even if the signals are mild. If there are signals, but you cannot check the blood sugar, treat with fast acting sugar anyway. It is better to be on the safe side.
Should We Keep a Record of the Low Blood Sugars?

YES.

Record:
→ the time the low blood sugar happened
→ blood sugar number at that time, if you checked it
→ the cause of the low blood sugar if you know, i.e. more activity, late meal

See previous record keeping example sheet
How Can We Prevent Low Blood Sugars?

With optimal diabetes control, you can expect 2-3 low blood sugars a week. They should be mild, easily fixed up and have a reason.

You and your child can prevent more frequent low blood sugar times if he:

→ aims for the target carbohydrate amounts for meals and snacks
→ eat meals and snacks on time or prepares for a delay
→ measures and injects insulin correctly, and eats right after the injection.
→ eats extra carbohydrate or reduce insulin before extra activity

If unexplained low blood sugars are happening often and you’re not sure how to treat, contact your Diabetes Team.
Managing Stage 3 Low Blood Sugars

Most children and parents recognize their early signals of low blood sugar without difficulty. For some children, particularly young ages, one of the first signals of low sugar may be behavior changes. The child may not recognize what is happening. Those in regular contact with a child should become familiar with the early signals of low blood sugar for their child.

If you notice the signals, question your child gently. If he does not seem to recognize what is happening, try to have him swallow some fast acting carbs. Within five or ten minutes, the signals of low blood sugar will start to subside. Your child will begin to realize what has happened. Stay with your child until the low sugar has completely cleared and mental alertness is fully restored. If a meal is due, make certain that it is available promptly.

In the later stages of a Stage 3 low blood sugar, your child may not be alert enough to swallow safely without choking. In this case, do not try to force him to do so. If you have Glucagon, give it right away or call for emergency medical care (911) or take your child to the nearest emergency center.

Using Glucagon—

Glucagon is a hormone that comes from the pancreas, just like insulin. Insulin lowers the blood sugar level. Glucagon raises blood sugar. The liver has stores of sugar. Glucagon acts on the liver to “open its doors” and release stored sugar into the blood stream.

Glucagon is used when your child is having a severe low blood sugar & where it may be unsafe to attempt to provide fast acting carbohydrate by mouth.

Glucagon is injected under the skin in the same sites used for an insulin injection. When the injection of Glucagon is given, the blood sugar rises in about five to ten minutes. Some children vomit after receiving Glucagon. This is normal. After, provide your child some juice to drink to restock the liver.
Glucagon, like insulin, is available by prescription. It costs approximately $100. Once mixed, it can only be used one time. Check the expiry date for a long shelf life when you purchase it. It should be good for 1 to 1 ½ years. Most families keep the Glucagon at home but take it with them on trips away from home, for example on a camping trip.

After a Stage 3 low blood sugar has occurred, it is important to look back on the events prior to the low blood sugar occurring. While uncommon, there may need to be steps taken to prevent future ones. As you look at potential causes, consider:

→ Was there any change in amount or timing of usual carbohydrate?
→ Was there more activity than usual or a delayed effect of activity on the blood sugar?
→ Was the insulin measured incorrectly or wrong dose given?
→ Was alcohol consumed?

If the situation is unexplained by food, activity or drinking alcohol, you should consider reducing the insulin dose according to the section “Insulin Dose Too High”. It would also be important to review the events with your Diabetes Team.

Identification

It is very important that your child have some form of visible identification, such as a Medic-Alert® bracelet or necklace. The “No Child Without” Medic Alert program is a school based program that provides Medic Alert protection for children ages 5 to 13. Ask your school if they are a participant school and obtain an application form.

Road ID - www.Roadid.com
Lauren’s Hope Medical ID www.laurenhope.com

Universal Medical ID Canada
P.O. Box 230 Stn A
Etobicoke, Ontario M9C 4V3
Canada

Phone: 1.800.616.3400
Web Site: www.universalmedicalid.com
Pause to Reflect . .

Choose the BEST answer for the following questions.

1. The following may be signals of low blood sugar. Choose those that apply.
   a) running to the bathroom, thirst, flushed face
   b) weakness, shaking, sweating, headache
   c) feeling grumpy, irritable, tired

2. The best treatment for low blood sugar would be
   a) wait until it passes
   b) take some fast-acting carbohydrate such as ________________
   c) take some insulin

3. Your child begins to feel shaky. Supper is about ½ hour away. You should
   a) not allow him to eat anything because supper will be served soon
   b) give some juice right away and have him eat the same supper
   c) give some juice now and then give less food at supper

4. Your child wakes up in the middle of the night and feels sweaty and shaky. You should:
   a) tell him to go back to sleep
   b) give juice right away
   c) give juice, wait 10 minutes and then have him eat another 15 grams carbohydrate as food choice
5. Which of the following may cause low blood sugar?
   a) not enough insulin
   b) playing soccer harder than usual
   c) eating more French fries than usual

6. Jacob has a gym class at 10:30. It will last for ½ hour. How many carbohydrates should he take for this class?
   a) 5 gms
   b) 10 gms
   c) 20 gms

7. Whenever Jacob has low blood sugar, he should
   a) treat and forget about it
   b) write down the time, date and reason (if any) for low blood sugar in the record book
   c) always decrease the insulin

8. Just before lunch today, Jacob had a low blood sugar. He took 10 gms of glucose tablets and felt better. He had gym class from 11:00 to 11:30.
   a) What are some possible reasons the blood sugar went low?
   b) What could he do to prevent the low blood sugar from happening again?
Illness
Illness

Control of diabetes is upset easily by an illness. Two very different situations can arise when a child is ill.

1. **Blood Sugar Rises** because an illness or infection produces a resistance to insulin. This situation often occurs along with a fever. Examples of illnesses which can cause increased blood sugars are colds, flu, chicken pox, ear infection, strep throat, tooth abscess, etc.

   ... Or ...

2. **Blood Sugar Falls** because diarrhea or vomiting or poor appetite are not allowing the body to absorb enough glucose.

Your child may need his insulin adjusted on these days. You must know what happens to diabetes control during illness and why, so you can manage periods of illness safely.

**Illness With a Rise in Blood Sugar ↑...**

**Why does blood sugar rise during illness?**

An illness or an infection produces a resistance to the action of insulin. When insulin action is weak, there is more glucose released from the liver. This raises the blood sugar level.

Even if your child cannot eat all the carbohydrate to target amounts, the increased release of glucose from the liver into the blood can cause a large increase in blood sugar.
I’ve heard “KETONES” can appear during illness ... What are they?

During illness, the cells do not receive enough glucose due to the lack of insulin action. Without the help of insulin, the cells cannot use glucose to produce energy. The body burns fat for energy instead of glucose. When this occurs, acid waste products called ketones appear in large amounts in the blood and spill over into the urine. High levels of ketones in the blood and urine are a sign of a serious lack of insulin action. **Ketones are serious and should be measured by blood or urine ketone sticks.**

**Why are ketones serious?**

Large amounts of ketones in the blood can cause severe changes in the body’s acid balance. This condition is called ketoacidosis (DKA). It is caused by a severe shortage of insulin. **Ketoacidosis is serious and requires immediate treatment and possibly hospitalization.**

**Warning Signs of ketoacidosis:**

→ Very thirsty – drinking large amounts of water.
→ Dry mount
→ Voiding frequently – large volume of urine.
→ Possible rapid weight loss.
→ Abdominal pain – feeling nauseated; possibly vomiting.
→ Feeling drowsy and weak.
→ Flushed cheeks, dry warm skin.
→ Rapid breathing.
→ Fruity odour to breath.
→ High blood sugars and ketones present in Blood & urine.

⚠️ **DKA is a medical emergency.**
### Adjusting Insulin During an Illness

*Use these guidelines every day of illness.*

**If you think your child is sick, begin the following routine:**

1. Check the blood sugar and urine ketones before each meal, bedtime and during the middle of the night. You may also want to check between meals as well. After you have each blood sugar and urine ketone information, go to the chart below to decide which situation you are in.

2. Eating or drinking - After you have each blood sugar and urine ketone information, go to the chart below, section titled “What to eat or drink.” What action you take will depend on where the blood sugar and ketones are. Avoid milk and milk products.

3. Treat the underlying illness. Your child may need to see a doctor for a treatable infection (example: strep throat so that the length of the illness is shortened. You can use Tylenol in the recommended doses for age. Check with your pharmacist about over-the-counter cough syrups and cough lozenges.

<table>
<thead>
<tr>
<th>Blood Sugar</th>
<th>Situation A</th>
<th>Situation B</th>
<th>Situation C</th>
<th>Situation D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4-13</td>
<td>14-20</td>
<td>Above 20</td>
<td>Above 13</td>
</tr>
<tr>
<td>Urine Ketones</td>
<td>Small or less</td>
<td>Small or less</td>
<td>Small or less (less than 8)</td>
<td>Moderate or more (8 or more)</td>
</tr>
</tbody>
</table>

**What to do with the insulin dose**

- Wait. Monitor at frequency in #1 above.
- *See rules below* for blood sugars under 7.
- Follow directions below,

**What to eat or drink**

- Try to use usual meal plan.
- If not able, switch to a fluid meal plan. This means drinking/eating 15 gms of carbohydrate each hour plus “extra fluids” (no carbohydrate).
- When blood sugars are above 20, use lots of “extra” fluids (until blood sugars fall below 20. At that time, resume use of fluid meal plan with fluids containing carbohydrate.

* * If blood sugar is less than 7; child is nauseated or vomiting; ketones are absent or small only - reduce the intermediate insulin dose you will be giving at that time by 20%. **Do not give** any short/rapid-acting insulin. If ketones are moderate (8) or more, give usual insulin dose and bring child to hospital at once. If illness continues, increase intermediate insulin by 10%. Continue to increase daily as needed to reduce blood sugar to less than 13.

Important: When illness is over, return to original intermediate-acting dose, immediately.

**Calculating total daily dose of insulin:**

- Name of short or rapid-acting insulin used
- Total amount of insulin used in the day (add together intermediate and short or rapid-acting insulin doses)
- 10% of total amount of insulin used in a day
- 15% of total amount of insulin used in a day
- 20% of total amount of insulin used in a day

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*PEDiATRIC Looking After Diabetes*
Can I learn to change the insulin during illness?

Yes! With experience, most parents learn to change the insulin during an illness. This prevents the blood sugar and ketones from going too high. Use the chart as a guide. When diabetes is new, it is expected that you will call your Diabetes Team for insulin adjustments. It takes awhile to learn how to manage an illness!

**Until you gain confidence through illness experience, get in touch with your Diabetes Team to make sure what you are doing is correct.**

**ILLNESS WITH A FALL IN BLOOD SUGAR ↓...**

Some illnesses cause blood sugars to fall instead of rise. These include vomiting and diarrhea without fever and loss of appetite due to teething pain, etc. When your child has these symptoms, less insulin may be needed. Contact your Diabetes Team.

**What to do if your child is sick and can’t eat.**

Try to get him/her to eat or drink the carbohydrate amounts to target OR Aim for 15 gms of carbohydrate each hour. If your child finds it difficult to take solid foods, you can use the liquid carbohydrate choices. **It is important to avoid dehydration.**

Contact your Diabetes Team if your child cannot take fluids or if he begins to vomit. If he/she cannot take fluids, or if vomiting (as an example, more than twice in 1 hour) occurs, he/she may need temporary intravenous fluids and glucose, with insulin. If you cannot reach your doctor, go to the Emergency Department. Take your blood sugar record book, and meter with you.

**DON’T DELAY IN THE HOPE THAT THINGS WILL GET BETTER ON THEIR OWN. SEVERE LOW BLOOD SUGAR CAN HAPPEN IF YOUR CHILD IS UNABLE TO EAT OR DRINK.**
Fluid Meal Plan for Illness Days Only

Each Hour Take: 15 gm carbohydrate-containing food/fluids
(See fluid examples for these listed below.)

“Extra” fluids are water, broth, sugar-free pop or sugar-free Jello. These do not contain carbohydrate and help to prevent dehydration.

<table>
<thead>
<tr>
<th>Carbohydrate Fluid Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 grams carbohydrate</td>
</tr>
<tr>
<td>= ½ cup vanilla ice cream</td>
</tr>
<tr>
<td>= 1 cup soup</td>
</tr>
<tr>
<td>= ¾ cup regular ginger ale</td>
</tr>
<tr>
<td>= 1 regular popsicle (1 whole)</td>
</tr>
<tr>
<td>= ½ cup regular Jello</td>
</tr>
</tbody>
</table>

When Do I Request Help?

These situations require help – either by phone or by going to the Emergency Department.

1. Your child continues to vomit – more than two times in an hour.
2. You have given extra short or rapid-acting insulin to correct high blood sugars or ketones, but the high ketones are not disappearing.
3. Blood sugars are low, but ketones are moderate/large.
5. Your child can’t eat or drink anything.
6. The illness is lasting longer than 24 hours. Your child has a fever.
7. You are not sure what to do.
PAUSE TO REFLECT

Read each question and choose the best answer.

1. With an illness or an infection, the blood sugar will probably:
   a) increase
   b) decrease
   c) stay the same

2. Always consider illness:
   a) not too important
   b) serious and needs frequent interventions
   c) an emergency which requires phoning a member of your Diabetes Team

3. During illness, if your child is nauseated or cannot eat or drink, you should:
   a) send your child to bed and to try to sleep it off
   b) decrease the insulin since your child is not eating
   c) phone your Diabetes Team for advice

4. If your child has a cold or a flu, you should seek help if:
   a) your child is showing moderate or large urine ketones (more than 8)
   b) the blood sugar is over 20
   c) you are not sure about some cold remedies you want to give your child
   d) all of the above

5. If your child cannot tolerate solid foods when ill, you should:
   a) check the blood sugar and urine ketones
   b) provide 15 gms of carbohydrate fluids or food every hour
   c) give your child plenty of “extra” fluids (i.e. broth, sugar-free soft drinks)
   d) all of the above

6. What might you do in this situation?
   Your child has had diabetes for three months. One morning s/he wakes up, throws up and then can’t eat breakfast. Her/his blood sugar is 5 with no ketones. What should you do?
Questions & Answers
Questions and Answers About Diabetes

You may have heard about diabetes complications. These can be scary. It will be important to discuss this with your child in an open, honest fashion as he asks questions and can understand reasons. This section is written to show you the steps that can be taken to reduce or prevent these complications. Ask your Diabetes Team what to expect in your child’s health care checks.

Question 1:  
*I’ve heard that diabetes can affect vision.*

There can be two effects of diabetes on vision. One is a temporary blurring of vision. The other is a change called retinopathy.

**Blurred Vision:** Blurred vision may occur when blood sugars have been high for some time. This may happen when diabetes is first diagnosed or with any prolonged period of high blood sugars.

The blurred vision is due to the high sugar content of the lens in the eye. This causes the lens to swell so it cannot focus properly. Blurred vision is a **temporary** symptom. It improves with better blood sugar control. Do not consider new glasses until treatment has brought the blood sugar down to normal levels for several weeks. Vision will need time to return to normal.

Sometimes, low blood sugar will briefly cause blurring of vision. As soon as the blood sugar returns to normal, the blurring disappears.

**Diabetes Retinopathy:** This is a condition affecting the retina of the eye. The retina is a layer of nerve cells and small blood vessels at the back of the eye. The retina can be compared to the film of a camera. After many years of diabetes and with higher than target A1c’s, the retina may become damaged, causing a decrease in vision and, in some cases, loss of vision.
Steps to Take to Reduce Changes to the Retina

1. **Referral to an Eye Specialist** – After your child has had diabetes for 5 years and is post-pubertal, your Diabetes Team will refer him to an eye specialist (Ophthalmologist) to look at the back of the eye, the retina. Your child will need to see the eye specialist every year after this visit. By doing this, the eye specialist can follow any changes and quickly treat, if needed. These actions prevent changes in vision due to diabetes.

2. **Best Blood Sugar possible** – sometimes this is difficult, however, the goal should always be the best possible overall blood sugars that can be safely achieved. The A1c test gives the “big picture” blood sugar control and needs to be done every 3 months.

Question 2:

*I’ve heard people with diabetes can have problems with their kidneys.*

Diabetes can harm the kidneys over the years. The tiny blood vessels in the kidneys filter waste products that the body makes. If these tiny blood vessels are damaged by too much blood sugar over the years, kidneys will leak protein into the urine. Changes to the kidney are called nephropathy.

2 a) **Steps to take to protect kidney health**

1. Aim for the best possible blood sugar control that can be safely achieved.
2. Check the urine for protein each year after your child is 15 and has had diabetes 5 years or more. A sample of urine is checked for very tiny amounts of protein called microalbuminuria. If microalbuminuria is detected, the test is repeated. If it persists, medication is used to delay further changes to the kidney. Some situations can cause “false positive” results for this test. These are: strenuous activity within 24 hours of the test; infection; menstruation. When doing this test, collect the urine sample at a time when there has not been strenuous activity for 24 hours.
Question 3:

*I've heard that people with diabetes must look after their feet. Is this important for my child?*

Feet should be treated the same as any other child’s feet. Because children don’t have the circulation problems that adults can have, any open cuts should heal the same as for any other child.

Question 4:

*During the year, what tests are done?*

Some tests are done when you come for visits to the Diabetes Team and other tests are done between visits.

The **A1c**, is done every 3 months. This test measures the average blood sugar control over the last 3 months and is a valuable tool to look at the overall diabetes control.

**Once a year, other tests** are done at the lab including:

**Thyroid Function** – 10% of children with diabetes develop a “lazy” thyroid and need thyroid replacement medication. The doctor may feel the thyroid gland (front of the neck) as part of the physical examination. If the thyroid gland is becoming “lazy”, it tends to become larger in size.

1. Other signs of a “lazy” thyroid are:
2. a slowing of growth – height
3. constipation
4. feeling persistently cold

If your family has a history of thyroid problems, it is important to tell your Diabetes Team.
After five years of diabetes and before puberty begins, other tests are added each year.

**Blood Fat Levels** – (cholesterol & triglycerides)

**Urine Test for Microalbumin** – done with a random urine sample

A **brief physical examination** will be done each visit to:
- look at injection sites
- feel the thyroid glands
- measure blood pressure
- look at general physical health

As puberty approaches, your child will be examined for physical signs that puberty is approaching. You may wish to discuss that this will be done with your child. For girls, breast development is looked at. For boys, testes size is examined. These are important indicators to know as insulin requirements increase during puberty.

**Question 5:**

*Should your child still see his family doctor?*

Yes, it is important to maintain a relationship with your family doctor. Diabetes care will be done primarily with your Saskatoon Diabetes Team however there may be times when you cannot access the team. You should continue to take your child to his family doctor for things you would have before diabetes, i.e. colds, infections, minor emergencies.

A family doctor’s comfort level in dealing with children who have diabetes may vary. Discuss with the physician what he is comfortable handling and what he is not.

**Question 6:**

*Can a young woman with diabetes have a baby?*

Yes! Best possible blood sugars prior to conception and throughout the pregnancy are very important. There is a Pregnancy Diabetes Team that provides guidance to ensure a successful pregnancy.
Question 7:  
*What about our other children? Will they get diabetes?*

Provided that neither of the child’s parents have type 1 diabetes themselves, the chance of another child in the family developing diabetes is very small, about 3%. This means that each of the child’s siblings has a 97% chance of not developing diabetes.

Question 8:  
*I’ve heard my child needs to have “good control” of diabetes over the years. What does this mean?*

→ **Best Possible Overall Blood Sugar Control** – is measured by the A1c every 3 months. Day-to-day blood sugars will go up and down and depend on many things – age of your child, activity, food changes, illness, growth, stress.

→ **Easily Recognized and Treated Low Blood Sugars** – Low blood sugars will happen. It is a part of trying to achieve the best possible blood sugars. However, more frequent than 2-3 lows a week may be too frequent and changes may need to occur with the routine.

→ **Healthy Body Weight** – We expect your child to grow and develop as any other child. Height and weight are plotted each visit on a growth chart.

→ **Feeling Good** – Your child needs to feel good, physically and emotionally. There will be ups and downs, but overall you should expect your child to have a healthy attitude towards family, friends and his diabetes.
Question 9:  
Is there any assistance available to help with the cost of supplies?

→ A group medical plan through your place of work may cover many diabetes expenses. Check with your Human Resources Department to find out about any coverage available to your family.

→ The Saskatchewan Drug Assistance Plan will reduce the cost of insulin, blood sugar checking strips and supplies. To qualify, fill out the Special Support form available from your pharmacist. It is based on income and medical expenses for the family.

→ Or obtain the form from:  
Saskatchewan Health - Drug Plan and Extended Benefits Branch,  
System & Client Support Services,  
3475 Albert Street - 2nd Floor,  
Regina, SK S4S 6X6,  
Phone: 1-800-667-7581 or 306-787-3317  
Fax: 306-787-8679  
www.saskatchewan.ca

→ If your income is below a certain level, you automatically qualify for the Family Health Benefits Plan. Call the numbers below if you need more information.  
  ▪ Toll Free: 1-888-488-6385  
  ▪ Regina: (306) 787-4723

→ Any extra private insurance plans you have
What Happens When We Leave the Hospital?
What Happens When We leave the Hospital?

The first few months after leaving the hospital are a time of adjustment. You will be given telephone numbers and email addresses so you can contact the Diabetes team.

Most families then come back for an appointment approximately 2 to 4 weeks after leaving the hospital. This appointment usually lasts about one hour. You may meet with all the team members. It is a time to review, ask questions and get some new information. You will need to bring the record book.

After this, appointments are usually scheduled approximately on a - 3 month basis for the first 14 months and then approximately every 6 months. The appointments are held in Pediatric Outpatients at Royal University Hospital, Saskatoon.
What is the Diabetes Clinic?
What is the Diabetes Clinic?

The clinic is really a team of doctors, nurses, dietitians and social worker who work together to help your family. The team is usually present at your appointment times and available between your actual appointments.

If you would like extra time with someone on the team, we can arrange this.

There are three main services of the clinic:

1. **Education in the hospital.**

2. **Ongoing care and education.**
   
   Through clinic appointments, appointments with team separate from clinic as needed by phone and email contacts.

→ Telephone/Fax/Email

   **Telephone** – After leaving hospital, you will be asked to call daily. Contact numbers of each team member are also provided as for urgent and non-urgent calls. Use these numbers for questions or situations you wish to discuss. Example, the first birthday party is coming up and you would like to discuss how to handle OR you’ve noticed a pattern of low blood sugars and would like to confirm what you should do for an insulin adjustment.

   **Fax** – After leaving hospital, you’ll be using a plan for insulin doses. As time goes by, your family will gradually take on the job of insulin adjustment based on the recorded patterns of blood sugars and sometimes you need a “3rd eye” to confirm what adjustment you think you need to make. Your record sheets can be faxed to the Diabetes Team. Write what you think you should do at the bottom of the fax and one of the team will get back to you.

   **Email** – The team has email and can respond to many inquiries this way.

What is the Purpose of Clinic Visits?

1. **Advice** to help your child achieve the best possible diabetes control. Blood sugar control is not always easy. Insulin and food changes will need to be made frequently.

2. **Support** - Having diabetes in your family may cause extra stress or worry. Family relationships may become strained. A brother or sister may be jealous of the attention given to the child with diabetes. Or, your child with diabetes may have difficulty adjusting during certain periods of life changes. Many families also benefit with counseling through Clinical Health Psychology. We can arrange a referral as needed.

3. **Education** - As children get older, they gradually take a more active role in the appointments and in discussing diabetes care. To help promote independence and responsibility, the child may be seen alone first and then with his parents.
All care providers who are directly involved in the diabetes routines are encouraged to attend.

4. Referral, as requested or as needed, to other services, which may include the eye specialist, child psychologist or mental health therapist, etc.

**What Happens at a Clinic Visit?**

You will meet with the Diabetes team members to discuss your concerns. The team will also have some questions to ask you and your child. Together you will assess the overall diabetes control and make a plan for any changes to carbohydrate, insulin, etc.

Depending on your child’s age, you may sit together in a meeting room or your child may spend some time alone with the team.

Your child’s height and weight will be measured and charted to be sure he/she is growing normally. A physical examination is done to assess injection sites, thyroid, puberty changes, etc.

The appointment is also a chance to get more information about diabetes care. At the beginning you do not need to know all the information about diabetes. Here is a list of some topics you may want to discuss as you come to visits.

_____ What happens when my child is sick?

_____ When to change the insulin dose, how much, which insulin.

_____ How to manage changes in appetite and growing needs.

_____ How to calculate the carbs of favourite family recipes.

_____ How to handle new situations – school activities, sports, Halloween, sleepovers, out of country travel, tournaments.

_____ Review of changes you’ve already made and situations you’ve already handled.
What Should I Bring to a Clinic Visit?

→ Your completed questionnaire sent with your clinic appointment letter. This is used by the team to quickly understand where things are at and what your concerns are.

→ Blood sugar records - It is important to have these written out, including the insulin, blood sugar and carb amounts. It is very difficult for us to assist you without these.

→ Your meters
The Different Ages - What To Expect
The Different Ages - What Can We Expect at Each Age?

Each age presents different challenges, just as it does for a child without diabetes.

A common question asked is “What should I expect my child to be able to do for diabetes care at this age?” The following is a guide only. Each child is an individual.

TODDLER AND PRE-SCHOOL – Meet Ashley, Age 3

For Ashley, it is difficult to understand why finger pokes and needles are needed and why eating regularly is such a big deal. Routine is the name of the game for Ashley. By having a routine every day, learns that a finger poke happens each meal and between, insulin two to four times a day and eating something often is part of her life. A quick, calm, reassuring tone helps. Distraction with toys, songs etc can get the jobs done quickly and calmly.

Offering only a few simple choices can be helpful-ex: Offering choices with a finger for the blood sugar check

Delaying or providing too many choices can prolong & make simple procedures more difficult.

Ashley’s carbohydrate targets at this stage are a guide by which to offer her food, but she cannot be made to eat, just like any other toddler. Frequent blood sugar checking helps to know where her blood sugars are and actions to be taken. Ashley may not be able to tell that she is having low blood sugar – changes in behaviour (irritability, whining, crying, hungry, sore tummy) can be signals for low blood sugar. Other caregivers (sitters, day care, grandparents) may be involved.

Even though Ashley is dependent on adults for all her care, she can still be given choices. This allows her to have a feeling of control of what’s happening. Some choices are not negotiable (i.e. having the insulin, checking the blood sugars), but others are (i.e. which finger to poke, rolling the insulin bottle).
SCHOOL-AGE CHILD – Meet Robbie

This age involves more activities away from home and parents. Robbie goes to school each day where he has gym, stays for lunch, goes on school trips and may have a long bus ride home after school. He may want to participate in sleepovers!

Robbie can understand what diabetes is and the different foods that make carbohydrate. He will likely be able to poke his own finger and use his blood sugar meter. He might not know what low blood sugar is in the beginning, but will learn his signals quickly and the treatment needed right away.

Robbie can be proud of his accomplishments – schoolwork, soccer – and the same goes for diabetes – doing finger pokes, the first injection, telling others about his routine.

Allowing Robbie to do the tasks he wants to do and can reliably follow through with may mean he is ready to do this task on his own. However, if you see him missing checks it’s probably time to step back in and assist with the task. Same with the other areas of diabetes self care.

TEENAGE YEARS – Meet Sheri

Teenage years are a time to establish one’s own identity, a time to test out the rules and a time where one’s body changes from a child to an adult. Many activities take place away from home and the teenager is responsible for making decisions about life and diabetes care.

Sheri is capable of performing all the tasks of diabetes care, but faces many influences that can affect her choices. Peers play a large role for Sheri. Most teens see taking insulin as necessary to feel well but find it hard to maintain this or to do the regular blood sugar checking.

Sheri’s parents still like to be involved – keeping up to date with what the blood sugars are, assisting with decisions on insulin doses, helping to figure out problems. Parents should also know how to check the memory in her meter and periodically let her know this is being done. Help her to keep all her care “out in the open”. Keep in the “know” about her insulin doses, patterns of blood
sugars and the challenges of the moment. Using a “what can we learn from this experience” attitude will help Sheri to learn from experiences.

She will experiment – staying up late with friends, using alcohol, smoking, perhaps missing insulin. Be open to hearing this and discussing with her the pros/cons of her actions and consequences. If your reaction to a high blood sugar is one of horror, she’ll soon stop telling you about this and the opportunity to make changes is lost. Be reassured – most teens can learn how to make good decisions.

Many teens (and parents!) get tired of the diabetes. Many find the routines annoying & the unpredictable blood sugars stressful. This is so normal. If this is happening in your family—reach out for support

Teens that do best are those with parents who are united in support of their teen stay involved in helping manage the diabetes & gradually transfer control to the teen.
How Can Our Family Continue To Learn About Diabetes
How Can Our Family Continue To Be Supported

There are lots of resources available. Here are some of them ...

Diabetes Canada

→ Diabetes Canada - Saskatoon and District Branch
  104 2301 Ave. C North
  Saskatoon, SK Canada
  Phone Number: 306-933-1238
  Fax Number: 306-244-2012
  Toll Free Number: 1-800-996-4446
  Website: www.diabetes.ca

→ Lace up with Team Diabetes

→ D-skate

→ Diabetes Camp for Children
  www.dcamps.ca

→ Family Camp for Families
  www.dcamps.ca

Why D-Camps?
From the moment your child was first diagnosed with type 1 diabetes, your entire world changed. Where you once were able to simply prepare meals for your family, you now have to consider glucose levels, measure food, count carbs, adjust insulin and find yourself obsessing over numbers. Even simple things like heading out for a family bike ride now involves remembering to pack snacks, juice boxes, test strips & meter.

The younger your child was diagnosed, the longer everyone in your family has had to accommodate the reality of diabetes into your lives.

D-Camps can empower your child and help make that reality easier to manage.

Where kids can simply be kids!
D-Camps help kids indulge their sense of fun and adventure in a diabetes-friendly environment where they can:

• Meet and connect with other kids who share the same experiences and “get” diabetes. Often, friendships made at camp will last long after camp has ended.
• Participate in outdoor activities such as swimming, hiking, canoeing, campfires and archery that help promote self-esteem and personal growth.

• Learn how to self-manage diabetes in a supportive, nurturing environment. Kids return from camp less reliant on their parents and better able to manage day-to-day hurdles.
Juvenile Diabetes Research Foundation (JDRF)

JDRF sponsors “Walk for a Cure”. This is a great way to connect with other families.

JDRF Canada Saskatoon Chapter
Box 30055, 33rd St. W.
Saskatoon, SK Canada
Phone Number: 306-955-2284
Fax Number: 306-955-2140
E-Mail Address: saskatoon@jdrf.ca
Website: www.jdrf.ca

Also watch YouTube for “JDRF Type 1 Diabetes 101” video and other JDRF videos.
Going Home - Ideas To Help You Cope
If your child is newly diagnosed, you have just spent a week or so in a very intense learning situation. Everything has been focused on understanding your child’s diabetes and learning how to do all the tasks involved with managing it. You probably haven’t had time to think about anything else.

Now, it is time to go home and get back into the routine of “normal” life. You may be wondering how you will be able to cope with caring for a child with diabetes along with the rest of your already busy life. Remember how your life changed when you brought your first child home from the hospital? It wasn’t necessarily better or worse, but it was definitely different. You may feel very much the same way now. Here are suggestions that may help you cope

1. Let go of your old expectations.
   
   ➔ Leave the housework; just do the essentials. Accept a lower standard around the house for a while.
   
   ➔ Cook plain and simple meals that are easy to calculate. Leave the baking recipe calculations.
   
   ➔ Have everyone eat the same food. What is good for a person with diabetes is good for the whole family.
   
   ➔ Rest when you can. Even though the actual tasks involve only a few minutes a day, you may find you are constantly thinking about them. Planning and preparing food six times a day also takes up a lot of time and energy.

2. Say No. 🔄
   
   Take time off from any unnecessary obligations.

3. Say Yes whenever someone offers to help you.
   
   It may feel strange accepting help at first, but friends and relatives really do want to help through this period of adjustment. Have them do laundry, or take your turn in the car pool. Let them clean house or take your kids on an outing. If you have friends interested in learning how to do checking and injections, teach them! Take any and all help offered. You will have ample opportunity to return the favors in years to come.
4. **Give it time.**

There are many emotions, doubts and fears going through your mind. It may feel like you are on an emotional roller coaster for the next while. After a few months, the never-ending checks and injections may “get to you”. **BE PATIENT WITH YOURSELF** and accept your feelings, good and bad. Eventually it becomes automatic – something that you do without thinking of it. Sometimes it takes a year or more to finally reach that safe place of acceptance.

5. **Talk about it.**

Find someone you feel comfortable talking to – someone you can be really honest and open with; perhaps a friend, parent, minister or someone else in a similar situation. It is okay to feel how you feel and often it is very helpful to talk it out.

6. **Build yourself a network of support.**

You may be surprised at where your support comes from. Some friends who you weren’t really close to may really understand what you and your family are going through. Other friends and family whose support you were counting on may not be there for you. You may wonder why you can’t just pull yourself together and get back to “normal”. You are not alone in this. Seek out the many, many parents of children with diabetes out there just like you.

7. **Seek out Waltzing the Dragon and other online resources.**

By parents, for parents. Taming the type 1 diabetes dragon together. WaltzingTheDragon.ca provides comprehensive, expert-approved information on the physical and emotional aspects of managing type 1 diabetes, plus tips from the trenches from parents who have lived it.
Useful mobile resources:

Bant  http://itunes.apple.com
GlucoseBuddy  www.glucosebuddy.com
MySugr Junior  www.mysugr.com

More ideas to help you cope

Think about learning to water ski. The skis feel ungainly. The life-jacket is bulky, the rope gets tangled. It feels unnatural. That is the first few weeks of living with diabetes. The tests and injections are still awkward. Drawing insulin from the vial makes you feel like you are all thumbs. Eating exactly on time, measuring macaroni ... it feels unnatural.

Then, the boat starts to drag you through the water. You try to do everything you’ve been taught. Arms straight, legs together, lean back ...
All the while, the force of the water is overpowering. You can hardly breathe, and you can’t see anything at all. This is the first few months at home learning to live with diabetes. It takes all your concentration and all your energy. You can’t cope with anything else. You try everything you are supposed to do. But the responsibility and the relentless routine are overpowering.

Sometimes things go wrong and you fall face first in the water. Sometimes you pull your arms in and fall flat on your back. You may even forget to let go of the rope and think you are going to drown, but you don’t. It may take many falls and many mistakes, but eventually you make it.

That is learning to cope with diabetes in your life...the first illness, the first Halloween, the first low blood sugar. Sometimes you think you just can’t do it anymore; but you do. You just keep picking up the rope and trying again.
But then, everything goes right and there you are skimming along on top of the water. It feels wonderful. You can breathe. You can see the boat and the lake and the sunshine. All the effort has paid off.

That is accepting the diabetes and getting on with the rest of your life. Being able once again, to concentrate on work and family, on friends and fun. To go for a few hours at a time without diabetes crossing your mind. To do all the tasks as automatically as brushing your teeth and combing your hair and not think of them as extra chores any more.

Eventually you start to explore a little and see what your skis can do. It’s scary the first time you cross the wake and skim up beside the boat. Then you try crossing back and forth behind the boat. You try different skis, faster boats. Sometimes you fall, but that’s okay because you know you can always get back up again.

That is gaining confidence and independence in controlling your diabetes. Adjusting and missing insulin, trying out new equipment and machines, seeing how much extra activity needs how much extra food. And sometimes you guess wrong and mess things up for a day or two, but you know you can get back into control.

And then one day you find yourself coaching someone who has never skied before, and you see their fear and remember being there yourself. And they see how well you ski and your confidence and example let them know if you can do it, so can they.

Lending an ear or a helping hand to other parents of children with diabetes is a wonderful way to repay everyone who helped and supported you. And giving enriches the giver as much as the receiver. It is a wonderful way to make new friends with whom you have so very much in common.

Written & edited by Clare & David Pattison, April, 1994.

2018 – Clare and David’s daughter is now 26 years old!
The Diabetes Team wishes you well in your diabetes care.