Looking After Diabetes

June 2016
This material was developed for the sole use of patients and staff of Saskatoon Health Region, Saskatoon, Saskatchewan, Canada. Diabetes Education Program, Saskatoon Health Region cannot accept responsibility for the use of this material by other agencies.

LiveWell Diabetes Program
Saskatoon Health Region
Royal University Hospital
103 Hospital Drive
Saskatoon, Saskatchewan  S7N 0W8
Phone:  (306) 655-2199
Fax:     (306) 655-6758
# Table of Contents

Introduction ................................................................. 4  
Looking After Diabetes .................................................. 7  
Learning ......................................................................... 10  
What is Diabetes ............................................................ 12  
Checking Blood Sugars ................................................... 18  
Insulin ............................................................................. 28  
Measurement Conversion ............................................. 45  
Which Foods and Beverages make Blood Sugar? ............... 46  
Activity ........................................................................... 59  
Low Blood Sugar ............................................................ 65  
Illness .............................................................................. 79  
Questions and Answers About Diabetes ............................ 86  
What Happens When We leave the Hospital? ...................... 93  
What is the Diabetes Clinic? ............................................ 95  
The Different Ages - What Can We Expect at Each Age? ....... 99  
How Can Our Family Continue To Learn About Diabetes? .. 103  
Going Home - Ideas to Help You Cope ............................. 107
Introduction
Introduction - Coping with the Diagnosis

Finding out that your child has diabetes is not easy. You will have lots of thoughts and feelings. Are we the only ones? Who will help us? How can we learn everything? What does this all mean? Diabetes may be something new in your family or something you may have dealt with before. You may have questions and feelings …

- **SHOCK**
  “It does not seem real that there is something wrong with my child”.

- **ANGER**
  “We didn’t do anything to deserve this”.

- **WHY ME??**
  “Why did my child get diabetes? This can’t be happening”!

- **SADNESS**
  “Things are going to be different”.

- **GUILT**
  “What did we do to bring this on”?

- **FEAR & ANXIETY**
  “How will this affect my child’s future?”

- **ACCEPTANCE**

  Accepting the reality of diabetes comes with time – different amounts of time for different people. It frequently takes about a year before diabetes is fully accepted and comfortably integrated into your daily lives. Accepting diabetes – that is, feeling less overwhelmed by feelings of denial, anger, sadness – is crucial to being able to live life fully while managing diabetes well.

All of these feelings are normal and a part of adjusting to diabetes now and in the future. Your feelings are just as important as the changes happening in your child’s body.
Diabetes is a life-long experience and requires ongoing involvement. Knowledge and skill in all areas of diabetes management are essential. One important area is learning how to cope successfully. Knowing how others manage may help.

Here are some real-life comments from parents.

**ON FINDING OUT ABOUT THE DIAGNOSIS OF DIABETES ...**

“Instant denial … check him again … you’re wrong! Not my child. Crushed. You want to take your child in your arms and never let him go”.

**THE FIRST FEW MONTHS ...**

“First day home – scared. I had the shakes for two days … constantly checking him … wondering when he’s going to have low blood sugar... never letting him out of my sight”.

**WHAT IT’S LIKE LATER ...**

“It slowly gets better. You learn to let go all over again. The first time you take him out is scary, but each time gets easier than the last”.

**THINGS THAT HAVE HELPED US TO COPE ...**

- “The teaching nurse and doctors are in close contact with you when you get home, so you learn you’re not sent home to deal with your new situation alone. It was very comforting talking to them on the phone”.
- “Family support … their willingness to learn about diabetes (as we were) in order to give our child proper care if we were absent”.

Our thanks to Lisa and Bill, parents of Cody for their thoughts.
Looking After Diabetes
Looking After Diabetes—Starting Out

Learning about diabetes takes time and learning continues after you leave the hospital.

Some common questions that families ask when they are in the hospital are:

“How long will we stay in the hospital”?

3 – 4 days is common. The length of time can vary from family to family. When your child first comes to the hospital, he may feel unwell from high blood sugar. After treatment is started, education and preparing for going home begins.

“Who do we see while we’re in the hospital”?

The first people you meet are the ward nurses and doctors. This may be you and your child’s first time in a hospital, so don’t hesitate to ask questions. Your Attending Doctor is your Diabetes Doctor. The Diabetes Nurse Educator will help you learn areas of diabetes management. The Dietitian Diabetes Educator will teach you all about meal planning for home. The ward nurses supervise as you start to check blood sugar, do injections, etc.

“What do we do while we’re here in the hospital”?

The dietitian and diabetes nurse will see your family. These sessions will range from one to two hours each day. Blood sugars will be checked four times each day (or more often, if needed) and insulin is given two to four times a day. Insulin adjustments are made according to the blood sugar levels. Three meals and three snacks are provided as the framework of the diabetes meal plan. After you have been here a couple of days, ‘passes’ can be taken. This is an opportunity to leave the hospital for a few hours - go for a walk, go to the mall to shop or go to a movie. You can begin to practice diabetes skills (ex: food at the movie) a little at a time.
“WHO SHOULD COME FOR EDUCATION”? 

Caregivers who are most closely involved with the child should attend all sessions. It is important, for example, in a two-parent family, that both Mom and Dad participate in all the learning sessions, both food related and insulin / blood sugar checking. Your child needs to know that his immediate caregivers are comfortable and confident with all aspects. You may not feel this way now, but it will come.

You will need some ‘break times’ from learning and caring for your child. Don’t be afraid to ask your support people (family, friends) for help; usually they want to know what they can do to help you at this time.

“WHEN CAN WE GO HOME”? 

As you are reading this, going home may sound scary. But, after a few days, it will seem less so. We judge the time to go home based on your comfort level – “Am I ready to try this at home”? Let us know how you are feeling as we go along. This helps us to plan your family going home.

Learning to Manage-- THE FIRST FEW DAYS AT HOME!

This will be a time of ‘first times’ – back to school, sitters, meals, sports, etc. You are not alone – our phone numbers will be provided for you. Please call.

Your diabetes doctor will expect you to call him for the first few days if going home. After the 1st few days, sending information & blood sugar records by email will be suggested.

What do you tell your child about Diabetes? As diabetes care will bring big changers to your family life—it is best to provide simple honest explanations. There are many online videos & tools to assist you, if needed. Your child may be able to participate in many aspects of care, even while still in hospital. Offering reasonable choices within the restrictions of diabetes, is usually very helpful in your child’s adjustment.
Learning
Learning

Learning about diabetes is ongoing. Your needs for learning will continue after you leave the hospital. Situations and your growing child change continuously. This page is a LEARNING Guide. It represents key areas for all families.

<table>
<thead>
<tr>
<th>INFORMATION</th>
<th>Who Helps</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>L</strong> Learning About Diabetes</td>
<td>Diabetes Doctor&lt;br&gt;Hospital Nurses&lt;br&gt;Diabetes Nurse&lt;br&gt;&lt;br&gt;• What diabetes is and how it is treated.&lt;br&gt;• How and when to check blood sugars.&lt;br&gt;• How to keep a record of blood sugars</td>
</tr>
<tr>
<td><strong>E</strong> Eating</td>
<td>Dietitian&lt;br&gt;&lt;br&gt;• How the carb counting works.&lt;br&gt;• How to plan meals at home.&lt;br&gt;• How to plan meals / snacks for school, etc.</td>
</tr>
<tr>
<td><strong>A</strong> Activities</td>
<td>Diabetes Nurse&lt;br&gt;Diabetes Doctor&lt;br&gt;Dietitian&lt;br&gt;&lt;br&gt;• What happens at school.&lt;br&gt;• How to handle sports: exercise and timing.&lt;br&gt;• What to tell coaches and teachers.</td>
</tr>
<tr>
<td><strong>R</strong> Reactions (low blood sugar)</td>
<td>Dietitian&lt;br&gt;Diabetes Nurse&lt;br&gt;&lt;br&gt;• The signals and treatment for low blood sugars&lt;br&gt;• How low blood sugars are reduced in frequency&lt;br&gt;• Medic Alert or other identification.</td>
</tr>
<tr>
<td><strong>N</strong> Needles and Insulin</td>
<td>Hospital Nurses&lt;br&gt;Diabetes Nurse&lt;br&gt;&lt;br&gt;• How insulin is measured and given – syringes, injection pens.&lt;br&gt;• How the insulin works – different kinds&lt;br&gt;• Where / when is it given, storing insulin.</td>
</tr>
<tr>
<td><strong>I</strong> Illness</td>
<td>Diabetes Nurse&lt;br&gt;Dietitian&lt;br&gt;&lt;br&gt;• What to do if your child is sick.&lt;br&gt;• When to call the doctor.</td>
</tr>
<tr>
<td><strong>N</strong> New Situations</td>
<td>Diabetes Doctor&lt;br&gt;Diabetes Nurse&lt;br&gt;Dietitian&lt;br&gt;&lt;br&gt;• How to handle parties, sleep-overs.&lt;br&gt;• What about alcohol, driving, jobs, careers.</td>
</tr>
<tr>
<td><strong>G</strong> Going Home</td>
<td>Diabetes Nurse&lt;br&gt;&lt;br&gt;• What supplies are needed / cost / insurance coverage.&lt;br&gt;• Medical identification.&lt;br&gt;• Follow up appointments.&lt;br&gt;• Who to contact for help / questions.</td>
</tr>
</tbody>
</table>
What is Diabetes

diabetes

dahy-uh-bee-tis, -teez

NOUN, Pathology.
1. any of several disorders characterized by increased urine production.
2. Also called diabetes mellitus [mel-i-tuh s, muh-lahy-] (Show IPA). a disorder of carbohydrate metabolism, usually occurring in genetically predisposed individuals, characterized by inadequate production or utilization of insulin and resulting in excessive amounts of glucose in the blood and urine, excessive thirst, weight loss, and in some cases progressive destruction of small blood vessels leading to such complications as infections and gangrene of the limbs or blindness.
3. Also called type 1 diabetes, insulin-dependent diabetes, juvenile diabetes. a severe form of diabetes mellitus in which insulin production by the beta cells of the pancreas is impaired, usually resulting in dependence on externally administered insulin, the onset of the disease typically occurring before the age of 25.
4. Also called type 2 diabetes, non-insulin-dependent diabetes, adult-onset diabetes, maturity-onset diabetes. a mild, sometimes asymptomatic form of diabetes mellitus characterized by diminished tissue sensitivity to insulin and sometimes by impaired beta cell function, exacerbated by obesity and often treatable by diet and exercise.
Let’s first look at what usually happens to food in the body.

The food we eat enters the stomach. There, some of it, whether it tastes sweet or not, is changed by digestion into sugar. The name of this sugar is glucose. Glucose passes through the wall of the small intestine into the bloodstream. Blood travels to every part of the body and delivers glucose to the cells. The cells are small building blocks which make up every part of the body. They need glucose for energy. This is where insulin is necessary. Insulin helps glucose get from the bloodstream into the cells.

**Normally**, insulin is made by the pancreas. It is one of many hormones the body normally makes. The pancreas is a gland located behind the stomach. When the blood sugar level begins to rise (after a meal or snack), a signal is sent to the pancreas. This signal tells the pancreas to put insulin into the blood. Insulin opens the cell like a key opens a door. This allows the glucose to enter the cells from the bloodstream. The cell can then use the glucose to provide energy in the body.
With diabetes, there is not enough insulin from the pancreas. Glucose cannot enter the cells. Without enough insulin, glucose stays in the blood and blood sugar levels rise higher than normal.

When glucose cannot pass from the bloodstream to the body cells because there is not enough insulin, symptoms of diabetes occur.

- **Frequent Urination:**
  Extra sugar in the blood goes through the kidneys into the urine. This sugar carries with it large amounts of water. This means frequent trips to the bathroom. Some children may start bedwetting again. This will improve when the blood sugars are lower.

- **Extreme Thirst:**
  The body tries to replace the water lost through the kidneys by creating a thirst.

- **Sudden Weight Loss:**
  Despite high sugar in the blood, without insulin, the cells cannot use glucose for energy. The body begins to burn body fat and muscle protein instead; so, weight loss occurs.

- **Fatigue and Weakness:**
  The body cells cannot get the glucose they need for energy.

- **Increased Appetite:**
  Cells need glucose to produce energy. Since the cells cannot use the glucose in the bloodstream, they create a hunger in their search for energy. You may have noticed an increase in your child’s appetite.

- **Blurred Vision:**
  When the blood sugar is high, it temporarily changes the shape of the lens of the eyes. Once the blood sugar level is closer to normal, vision improves.

- **Ketones:**
  When fat is burned for energy instead of glucose, excess ketones appear in the blood and urine. Ketones are acids.

- **Heavy or Labored Breathing**

- **Stupor or Unconsciousness**

Symptoms will vary from one child to another. The symptoms tend to develop quickly. Since the symptoms are due to high blood sugar levels, they will disappear as the blood sugar become lower again.
There are two common types of Diabetes:

- type 1
- type 2

**type 1 Diabetes**

Ten percent (10%) of all people with diabetes have type 1 diabetes. With type 1, the pancreas loses the ability to produce insulin. Symptoms usually develop quickly.

People with type 1 Diabetes cannot make their own insulin anymore, because of an autoimmune response causing the pancreas cells to be destroyed. While its causes are not yet entirely understood, it is believed that both genetic factors & environmental triggers are involved. Its onset has nothing to do with diet or lifestyle. There is nothing one can do to prevent type 1 diabetes and-at present-nothing you can do to get rid of it. People with type 1 Diabetes will always require insulin injections or pumped insulin until a cure is found. Most people with type 1 diabetes manage the challenges well and lead full & active lives.

**type 2 Diabetes**

Ninety percent (90%) of people with diabetes have type 2. With this type, the body is unable to use its own insulin effectively. People with type 2 diabetes are usually older and overweight. For these people, weight loss usually improves the body's ability to use its own insulin. The type 2 diabetes usually has a gradual onset. In fact, some people diagnosed with type 2 diabetes never experience any symptoms. They are often diagnosed during a routine physical examination or while in hospital for another reason.

Type 2 diabetes can occur in children and youth also. Extra tests may be ordered if your Diabetes Doctor thinks this is the case. Sometimes it is difficult to determine whether the diagnosis is type 1 or 2 & extra lab tests may be required.

Be aware that the advice you may receive from family, friends and other health professionals often refers to type 2 diabetes. Type 2 diabetes is a completely different condition than Type 1.
Is there a cure for type 1 diabetes?

Because the cause of diabetes is not yet fully understood, there is no known cure. There is a lot of work being done in this area as researchers are looking at the genetics of diabetes; who are at high risk to get diabetes; what causes it and what are the best treatments. Each year improvements are made in the ‘tools’ to treat diabetes. This provides hope and encouragement. While ‘a cure’ is not available, it is important to take care of diabetes now so your child will feel well and grow well.

Treatment of type 1 consists of:

- Taking insulin injections several times daily or using a pump that delivers a steady insulin supply with extra at meal & snack times
- Checking blood sugars several times daily
- Being on a meal plan—knowing the carbohydrate eaten at all times
- Handling exercise with insulin or carbohydrate changes.

The main goal is to achieve a balance between three things:

- the amount of carbohydrate by meal
- the usual activity level
- the insulin taken for the meal

Pills cannot be used to treat type 1 diabetes. Diabetes pills stimulate the pancreas to make more insulin. Insulin replacement must be provided by injection.

No complementary or alternative therapies—nutrition supplements will take away or treat type 1 diabetes. Under no circumstances, should the child discontinue the insulin injections.

Continued well managed diabetes will help prevent the development of possible complications.
PAUSE TO REFLECT …

The following questions will help you review the main points in this section.

1. A part of the food eaten changes into ________________________.

2. Every part of one’s body is made of small building blocks, called ________________________.

3. Glucose is necessary because cells use it to produce ________________.

4. ________________________ opens the cell like a key opens a door. This allows glucose to enter the cells from the bloodstream.

5. Insulin is produced in the body by an organ called the ________________________.

6. With diabetes, the blood glucose will ________________________ because the pancreas does not make enough insulin.

7. What are the main goals and treatment for your child? …
Checking Blood Sugars
Checking Blood Sugars

In diabetes, the body’s natural control the blood sugar is out of order. You are now trying to keep the blood sugar in the target range by setting up a balance between the carbohydrate, activity and insulin. Checking the blood sugar is the only way to decide what changes to make, to aim for the target.

How Can Checking Blood Sugar Help?

1. **Useful Information**
   For example, the blood sugar checks at school or at a sports event can tell you how carbohydrate amounts or insulin doses are working.

2. **Spot checks for Low Sugars**
   If you feel that the blood sugar might be too low and are unsure, a spot check will verify if the blood sugar is low or not. Your child can learn what lows feel like as you confirm the feeling with the meter check.

3. **Fast Information**
   With the ups and downs of diabetes control, you need lots of information achieved by regular daily checking.

4. **Your family is part of the team.**
   Information is collected at home about the usual blood sugar pattern. This gives both you and the Diabetes Team more information to make changes to the meal plan and/or insulin.

Are There Any Problems With Checking?

**Using the correct technique is very important.** It is very important that hands are clean as any food or juice on the fingers will affect the result.

If your child is doing the checks, it is necessary for a parent to be involved, especially to ensure the information is recorded and to look at the patterns of blood sugars. Your child may participate in the record keeping, but this can become a tedious aspect of daily care. Often parents are responsible for this aspect.
The meter memory will keep track of blood sugars by date & time. However, many of them will not have carbohydrate, insulin memory capability. These must all be included in the daily record keeping.

Accurate daily records will help you & the diabetes team decide when changes are needed in the insulin doses or meal plan.

**What Supplies are Needed?**

1. A glucose meter – *single use strips. Your diabetes nurse can let you know which meters children and families prefer.
2. A finger poking device and lancets.
3. A record keeping system – pages or booklets for recording blood sugars, insulin, carbs, activities and low blood sugars. See previous example
   Several Apps are available and useful.

**How much do these supplies cost?**

Prices change, so these are average:

1. Glucose meters – usually provided free at the beginning when buying strips.
2. Glucose strips – about $1 each.
3. Finger poking device (a finger poker is included with the meter).
4. Lancets - about $15.00 per pack of 200.

**Is there coverage for these supplies?**

Potential sources of coverage in Saskatchewan are: Blue Cross MSI; Group Medical Insurance (GMS); Work insurance plans, extra coverage available through the Saskatchewan Drug Plan and Family Health Benefits Plan.
### Checking Blood Sugar

**Blood Sugar = Blood Glucose**

<table>
<thead>
<tr>
<th>High Blood Sugars</th>
<th>Blood Sugar Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; Check for ketones</td>
<td>Before meals:</td>
</tr>
<tr>
<td>&gt; Check for ketones</td>
<td>Less than 6 years old: 6-10</td>
</tr>
<tr>
<td>&gt; Check for ketones</td>
<td>6-12 years old: 4-10</td>
</tr>
<tr>
<td>&gt; Check for ketones</td>
<td>13-18 years old: 4-7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Low Blood Sugars</th>
<th>Signs</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; Take fast-acting sugar</td>
<td>&gt; Hungry</td>
</tr>
<tr>
<td>2.0 mmol/L</td>
<td>&gt; Shaky</td>
</tr>
<tr>
<td>3.0</td>
<td>&gt; Sweaty</td>
</tr>
<tr>
<td>4.0</td>
<td>&gt; Weak</td>
</tr>
<tr>
<td>5.0</td>
<td>&gt; Tired</td>
</tr>
<tr>
<td>6.0</td>
<td>&gt; Grumpy</td>
</tr>
</tbody>
</table>

**Feeling Good!**

- Thirsty
- Tired
- Blurry vision
- Frequent urination

> Write your blood sugar goals here: _________

**BDG Checking Blood Sugar Chart**

- **High Blood Sugars (HBG):**
  - 20.0
  - 17.0
  - 15.0
  - 13.0

- **Feeling Good! (FBG):**
  - 10.0
  - 7.0
  - 6.0
  - 5.0

- **Low Blood Sugars (LBS):**
  - 4.0
  - 3.0
  - 2.0

> Write your blood sugar goals here: _________
Ideally, you will strive for blood sugar levels as close to normal as possible without frequent low blood sugars, and without affecting your child’s healthy emotional development.

What Do We Do With All These Numbers?

To make the most use of blood checking information, keeping a record of results is vital. Keeping a record book allows you to see a trend in blood sugars from morning to night, from weekday to weekend, the effect of activity, etc. Small books are available for record keeping. Some meters have a memory to store numbers; but this doesn’t take the place of a record book, where you record not only the blood sugars but also insulin doses and carbs eaten.

Children who are familiar with numbers can help to keep the record book. It is not realistic to expect your child to take on this job all by himself. As your child gets older and does the checking and recording by himself, make a habit of checking the meter memory every few days.

When talking about the blood sugar numbers, avoid any judgment placed on the numbers by calling them ‘good’ or ‘bad’. A child (even parents too!) can equate this with not being good enough or being a good or bad person. Consider the blood sugar numbers just as information—what is working, what is not working & what changes made need to be made. Another way to communicate them is to call the numbers ‘above the target’, ‘out of the range’, ‘up or down’, ‘at target’. This helps to avoid taking the blood sugar numbers personally!
<table>
<thead>
<tr>
<th>Time</th>
<th>Meal</th>
<th>Blood Sugar</th>
<th>Carbs</th>
<th>Insulin Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:00 AM</td>
<td>Breakfast</td>
<td>100</td>
<td>50</td>
<td>Humulin N</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>Lunch</td>
<td>120</td>
<td>75</td>
<td>Humulin N</td>
</tr>
<tr>
<td>6:00 PM</td>
<td>Dinner</td>
<td>150</td>
<td>50</td>
<td>Humulin N</td>
</tr>
<tr>
<td>10:00 PM</td>
<td>Bedtime</td>
<td>110</td>
<td>30</td>
<td>Humulin N</td>
</tr>
</tbody>
</table>

**Comments:**
- Monitor for any changes in blood sugar levels.
- Adjust insulin as needed based on meal times.
- Stay hydrated throughout the day.

**Note:** This chart is for reference only and should be reviewed with a healthcare professional.
Are There Any Other Blood Tests Needed?

Yes!

1. The **A1c** measures an overall average of all the blood sugar levels over a period of two to three months. Hemoglobin in the red blood cells can link up with blood sugar. This linking is called **Glycosylation**. The more blood sugar there is in the blood, the more glycated (or sugar-added) hemoglobin is formed. The A1c reading will change with the blood sugar levels. The A1c is **not** the same as the meter's average.

   The test needs to be done every 3 months at the lab.

   This test cannot be used for day-to-day adjustment of diabetes control. It is used to tell the **overall** blood sugar control – the “big picture look.”

**Target A1c goals by age group:**

- <6 years  A1c <8%
- 6-12 years A1c <7.5%
- 13-18ears A1c <7%

2. **Ketone checks** either by blood or urine ketone sticks are needed during illness, surgery or other stressors affecting blood sugars.

   Ketones are a cause for concern

   Have ketone strips at home for ketone checking at all times. As you may not need to use them often, check expiry date. Once the bottle is open the strips must be used within 6 months or replaced.

3. **Lab work** to check thyroid, cholesterol levels, check on the health of the kidneys will be done at regular intervals
Pause to Reflect

1. What is the target blood sugar range for your child?

2. What are the best times of the day to check the blood sugar on a regular basis?

3. What are the most important steps in the technique you use?

4. What is the name of the lab test that checks the overall blood sugar control?
Insulin

**Gluconorm** *(repaglinide)*  
**Diamicron MR** *(gliclazide)*  
**Diabeta** *(glyburide)*  

**Actos** *(rosiglitazone)*  
**Avandia** *(pioglitazone)*

**Glucophage/Gycon** *(metformin)*

**Invokana** *(canagliflozin)*  
**Forxiga** *(dapagliflozin)*  
**Jardiance** *(empagliflozin)*  

**Januvia** *(sitagliptin)*  
**Onglyza** *(saxagliptin)*  
**Trajenta** *(linagliptin)*

**Prandase** *(acarbose)*

**Victoza** *(liraglutide)*  
**Byetta** *(exenatide)*  
*by injection*
Insulin

Until recently, all insulin was made from the pancreas glands of pigs or cattle. These insulins are very similar to human insulin. Insulins identical to human insulin are now made in the laboratory and widely used.

What Kind of Insulin Will Be Used

There are four kinds of insulin:

→ rapid-acting
→ short-acting
→ intermediate-acting
→ long-acting

For each kind of insulin, there is:

→ an onset of action (the time it takes for the insulin to start working after the insulin is injected)
→ peak action (the time of greatest blood sugar lowering effect)
→ duration of action (how long the insulin remains working)

<table>
<thead>
<tr>
<th>Insulin Types</th>
<th>Starts (hours)</th>
<th>Strongest (hours)</th>
<th>Lasts (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAPID-ACTING</td>
<td>Humalog / NovoRapid / Apidra</td>
<td>5-10 minutes</td>
<td>1-2</td>
</tr>
<tr>
<td>SHORT-ACTING</td>
<td>Regular / Toronto</td>
<td>¼ - ½</td>
<td>2-3</td>
</tr>
<tr>
<td>INTERMEDIATE-ACTING</td>
<td>NDH N</td>
<td>1½ - 2</td>
<td>8-12</td>
</tr>
<tr>
<td>LONG-ACTING</td>
<td>Lantus Levemir</td>
<td>1 – 1½</td>
<td>None</td>
</tr>
</tbody>
</table>
NOTE: Action times for insulins may vary for children.

It is common to combine both a short or rapid-acting and intermediate-acting insulin. They are mixed together in one syringe and given together.

DRAW A PICTURE TO SHOW HOW YOUR CHILD’S INSULIN WORKS:

<table>
<thead>
<tr>
<th>Brkfst</th>
<th>Lunch</th>
<th>Supper</th>
<th>Bedtime</th>
<th>Next Morning</th>
</tr>
</thead>
</table>

How Many Injections are Needed?

Usually one injection of insulin in the morning will not keep the blood sugar controlled until the following morning. A second injection, taken before supper, provides better control. The second injection may have only one kind of insulin or a combination of two. Many children use three injections a day – the intermediate-acting insulin is given at bedtime.

CHILDREN, PARENTS & NEEDLES – MAKING IT WORK

Needles can be frightening. All of us have previous experience with needles which may be negative. Here are a few suggestions to help children (and parents) cope.

▲ Prevent Fears by introducing needles carefully. If your child is young, show the steps in giving an injection with a doll. Next, allow the child to give the doll a needle. Have the child practice holding still while you do all the steps in giving an injection except puncturing the skin. Praise even small achievements.

▲ Handle Fears calmly and with empathy.
1. Be honest and never lie about pain.
2. Teach simple coping strategies and adapt to the child’s own style. Here are some strategies that have helped individuals (young child, older child / teen):
   a. Count to 3, then inject.
   b. Help with swabbing or injecting.
   c. Hold onto a favorite doll, stuffed animal, or hand.
   d. Some children want to watch the procedure and others want to be distracted – ask the child which is preferred.
   e. Use deep breathing.
3. As a parent, it is important to be a good model of coping, even if you are fearful of needles yourself.
4. Give some choices (e.g., “What do you want to hold?”) and allow the child to help, but avoid procrastination. Be flexible about how much the child participates – it will vary according to the child’s age, ability, and interest on any particular day.
5. Be sure to give lots of praise or hugs for achieving even a small success. When introducing injections, a small treat (like a sticker) can help a young child.

Adapted from a Newsletter published by the Diabetes Care Program of Nova Scotia.

**Giving a Needle ...**

**How Much Should I Expect My Child To Do?**

A lot of this will depend on your child. This chart will give some ideas.

<table>
<thead>
<tr>
<th>Years Old</th>
<th>Insulin</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 – 5</td>
<td>Helps pick injection sites; pinches up skin.</td>
</tr>
<tr>
<td>6 – 7</td>
<td>Pushes plunger on syringe in after parent inserts needle.</td>
</tr>
<tr>
<td>8 – 9</td>
<td>Starts to give own injections (at least one/day). Measures insulin in syringe or with pen; does many injections.</td>
</tr>
<tr>
<td>10 – 13</td>
<td>Mixes two insulins in one syringe or adept with pen.</td>
</tr>
<tr>
<td>14+</td>
<td>Chooses sites.</td>
</tr>
</tbody>
</table>

Adapted from Becton Dickinson – Getting Started
When Should the Insulin Be Given?

When using a short-acting insulin, inject the insulin 20 to 30 minutes before a meal. For example: give the morning injection 20 to 30 minutes before breakfast. Give the second injection about 20 to 30 minutes before the evening meal. Do not wait longer than 30 minutes between giving the insulin and eating. If the blood sugar before the meal is low, fix the low sugar and do not leave any time between the insulin injection and eating. If a rapid-acting insulin is used, inject and eat right away.

Where Should the Insulin Be Kept?

How Long Will it Last?

It is always a good idea to keep an extra insulin bottle in the refrigerator. This reduces the risk of germs growing in the insulin. You can keep the insulin your child is using at room temperature for up to 30 days. Insulin is spoiled by freezing.

Insulin bottles have expiry dates stamped on the labels. When you buy your insulin, always check this date. Each insulin bottle contains 1000 units of insulin. A bottle of insulin usually costs about $15.00 - $22.00 each.

How Should We Measure the Insulin?

The amount of insulin (dose) is measured in UNITS of insulin. Disposable syringes are available for measuring insulin. Use them once and then throw them away. Syringe sizes vary from 30, 50 to 100 units.

Each line on this syringe measures 2 units.
They may be marked with an odd-numbered scale and an even-numbered scale OR they may be marked with an even-numbered scale.

### 30/50 UNIT INSULIN SYRINGES

![30/50 UNIT INSULIN SYRINGES](image)

*Each line on this syringe measures 1 unit.*

### Measuring One Kind of Insulin

1. If the insulin is cloudy, first mix it by rolling the bottle between your hands. Shaking produces bubbles, which make it more difficult to measure the correct dose of insulin.

2. Wipe off the top of the bottle with alcohol.

3. Add air to the bottle before removing the insulin. Draw into the syringe an amount of air equal to the insulin dose you need.

Insert the needle through the centre of the rubber stopper and inject the air into the bottle.
4. Turn the bottle and syringe completely upside down, making sure the top of the needle is covered by insulin.

5. Pull down slowly on the plunger to withdraw the insulin.

6. Check for air bubbles. If there are any, withdraw a little more insulin than required. Tap the syringe with your finger to move the bubbles to the top of the syringe. Then, inject the bubbles and extra insulin back into the bottle. You may have to repeat this once or twice to get rid of all the air bubbles.

7. Double check to make sure that you have the correct dose.

8. Remove the syringe and needle from the rubber stopper. You are now ready to inject.
Measuring Two Kinds of Insulin

For example: clear (short- or rapid-acting insulins) and cloudy insulins (intermediate or long-acting)

NOTE: The method below shows the clear insulin being put in the syringe first. The cloudy insulin could also be put in the syringe first. It is important to pick one method and do it that way all the time.

1. Mix the cloudy insulin by rolling the bottle in your hands. Avoid shaking.

2. Wipe off the top of both the clear and cloudy bottles with rubbing alcohol.

3. Add air to each insulin bottle. Draw air into the syringe equal to the dose of cloudy insulin.

   Insert the needle through the centre of the rubber stopper of the cloudy insulin bottle and inject the air.

4. Remove the syringe completely from the bottle without drawing any insulin from the cloudy bottle now.
5. Draw air into the syringe equal to the dose of clear insulin.

   Insert the needle through the centre of the rubber stopper of the clear bottle and inject the air.

6. Turn the clear bottle and syringe completely upside down. Make sure the top of the needle is covered by insulin.

7. Pull down slowly on the plunger to the correct dose of clear insulin. Make sure there are no air bubbles. If there are any, withdraw a little more insulin than required. Tap the syringe with your finger to move the bubbles to the top of the syringe. Then, inject the bubbles and extra insulin back into the bottle. You may have to repeat this once or twice to get rid of all the air bubbles.

8. Remove the syringe from the clear bottle.

9. Reinsert the needle into the cloudy bottle.

10. Turn the cloudy insulin bottle and syringe upside down and slowly withdraw the correct dose of cloudy insulin. It will mix immediately with the clear already in the syringe. Do not withdraw more cloudy than you need. You cannot inject the now-mixed insulins in the syringe back into the cloudy bottle.

11. Double check your total dose. Withdraw the needle from the bottle. You are ready to inject.
Diluting Insulin

Small children may require small amounts of insulin. It is usually easy to measure these small amounts when the insulin is diluted. Follow the steps below to dilute the insulin. The diluent can be obtained from your diabetes doctor or nurse and pharmacies can order it.

### TO DILUTE THE ‘N’

1. Take out 500 units of diluent. Discard.
2. Take out 500 units of N and put this into a diluent bottle.
3. Label the bottle.

<table>
<thead>
<tr>
<th>Real Amount</th>
<th>Diluted Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 unit</td>
<td>1 unit</td>
</tr>
<tr>
<td>1 unit</td>
<td>2 units</td>
</tr>
<tr>
<td>1.5 units</td>
<td>3 units</td>
</tr>
<tr>
<td>2 units</td>
<td>4 units</td>
</tr>
<tr>
<td>2.5 units</td>
<td>5 units</td>
</tr>
<tr>
<td>3 units</td>
<td>6 units</td>
</tr>
<tr>
<td>3.5 units</td>
<td>7 units</td>
</tr>
<tr>
<td>4 units</td>
<td>8 units</td>
</tr>
</tbody>
</table>

- Remember to add air to the bottles in amounts equal to the amount of insulin or diluent you will be removing just as you would when giving an injection.

### TO DILUTE THE ‘R’

1. Take out 250 units of diluent. Discard.
2. Take out 250 units of R and put this into a diluent bottle.
3. Label the bottle.

<table>
<thead>
<tr>
<th>Real Amount</th>
<th>Diluted Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>¼ unit</td>
<td>1 unit</td>
</tr>
<tr>
<td>½ unit</td>
<td>2 units</td>
</tr>
<tr>
<td>¾ unit</td>
<td>3 units</td>
</tr>
<tr>
<td>1.0 unit</td>
<td>4 units</td>
</tr>
</tbody>
</table>

Thanks to Clare and David Pattison for writing this page.
Where is the Insulin Given?

Insulin is injected into the fatty tissue under the skin. It is absorbed slowly from the fat into the bloodstream. Injecting insulin into the same area every day may cause the tissues to become hard, thick and lumpy. Although these thickened areas may be less sensitive to the needle, avoid them. Insulin may be poorly absorbed from these sites. To avoid thickening of the tissues, change your site for each injection.

The rate of insulin absorption may vary depending on the body area used. It is, therefore, not a good idea to inject your insulin in the arm one day and the leg the next. For example: the morning injection could be done in the buttocks area and supper injection in the arms. The length of time that you stay in one area will vary depending on the age of your child.

Where to Give the Needle?

You can give insulin in arms, legs, stomach and hips. Give the next needle one inch (1”) away from where you gave the last needle.
Injection Pens

An injection pen is a device that holds a tube of insulin. The tube is inserted into the pen; a needle is attached to the pen; the insulin dose is dialed up. By pushing the button on the end of the pen, the insulin is injected (after you have first injected the needle through the skin). Use of a pen can make dosing/injections more convenient and discrete. However, most children/teens use two types of insulin at one time. Pens can be used, but two pens need to be used – one for each type of insulin. Ask your educator to show you the pens if you are interested.

Insulin Delivery Device

Insulin Pump
An insulin pump is a device (about the size of a pager) designed to deliver small amounts of rapid-acting insulin around the clock (basal dose). Extra amounts of insulin are delivered when meals/snacks are taken (boluses). A needle is inserted under the skin – it contains a small tube, which remains in place for 2-3 days. It is then removed and a new “set” inserted. Tubing is connected to the pump and “set” to deliver the insulin.

To gain the most benefit from a pump, a person must be committed to checking blood sugars 4-7 times a day; learning how to count carbohydrates and make insulin adjustments according to carbohydrates and blood sugar changes.

Pumps currently are $6,000, with tubing supplies approximately $200.00 per month. Many insurance companies cover cost of supplies, but this can be quite individual. If you would like to know more about insulin pumps, talk with your diabetes educator.
How to Inject the Insulin

These are the steps to give the needle to yourself …

1. **Pinch** up the skin and fatty layer.

2. **Poke** the needle straight through your skin.

3. **Push down** the plunger all the way.

4. **Pause**, for a few seconds to let the insulin absorb (may not be able to do for a small child)

**Use the syringe only once.**
**No other person should use the needle.**
Dispose the used syringes safely. Ask your local pharmacy what program they offer for syringe disposal. (Used syringes are called Sharps.)

---

**Note:** Do not mix different companies of insulin in the same syringe. For example: Humulin and Novolin.

**DO NOT** use areas with lumps when giving your needle. Show these areas to your doctor.
Can Other Problems Occur at the Injection Sites?

Sometimes, there will be a little bleeding when you remove the needle – or a bruise will form later. This means that a small blood vessel close to the surface of the skin has been damaged. This is harmless and no cause for concern. If this seems to be happening often, firmly press a dry cotton ball over the spot when you remove the needle for one or two minutes.

You may notice some ‘leak-back’ at the puncture site when you take the needle out of the skin. To prevent this, letting go of the pinch at the same time as you take out the needle may help.

Rarely, when you begin to take insulin, red, itchy lumps may appear at the injection sites, lasting a few hours, or even for several days. This is caused by an allergic reaction to the insulin. This is usually temporary. If this needs treatment at all, your doctor may prescribe antihistamine tablets – or suggest a different insulin preparation.

Some Questions You May Have...

Can my child sleep in?

See ‘Low Blood Sugar’ Chapter …’Sleep Ins’ …

What should I do if I forget to give the insulin?

The answer to this varies depending on when you remember and how much insulin you take. Contact your doctor or diabetes educator.
Pause to Reflect . . .

Insert the names of your child’s insulin(s) into the blank spaces.
____________________________ _________________________

Choose the BEST answer for the following questions.

1. Insulin is necessary because –
   a. it helps sugar enter the cells to give energy
   b. it is made in the cell for energy
   c. it breaks down sugar to give energy

2. Write the name of the short-acting or rapid-acting insulin your child takes.
   ______________________
   It works for:  a. 1½ hours   c. 6 – 8 hours
   b. 2 – 3 hours   d. 3 – 4 hours

3. If your child takes a fast- or rapid-acting insulin before breakfast, this insulin will have its **peak** action –
   a. before breakfast the next morning
   b. in the midmorning, before noon
   c. about one hour after it is injected
   d. in the late afternoon, before supper

4. Write the name of your child’s intermediate-acting insulin.
   ______________________
   It lasts for:  a. 6 – 12 hours
   b. 18 – 24 hours
   c. 4 – 6 hours

5. If your child takes the intermediate-acting insulin before breakfast, this insulin will have its peak action –
   a. before the noon meal
   b. in the evening, before the bedtime snack
   c. in the afternoon, before supper

6. When you measure insulin in the syringe, what is the last step?
   a. get rid of air bubbles in the syringe
   b. add air to the bottle
   c. double check to make sure you have the correct dose
   d. roll the insulin bottle between your hands
7. When a bottle of insulin or a cartridge of insulin is opened, it can be stored at room temperature or in the fridge for:
   a. 24 hours
   b. one week
   c. 30 days

8. If you are measuring two kinds of insulin and you accidentally measure too much insulin when adding the second insulin, you should –
   a. inject the extra insulin back into the insulin bottle
   b. inject the extra insulin so it will not be wasted
   c. discard all the insulin in the syringe and start again
   d. give the injection anyway and eat extra food

The next questions are about learning to “adjust” the amounts of insulin. This skill needs some time to learn and you won’t be expected to know how to adjust the amounts of insulin right now.

9. If your child takes a fast- or rapid-acting insulin, such as __________, before supper, the blood sugar check that would tell you how well this insulin has done its job on the blood sugar would be the one done before –
   a. breakfast
   b. bedtime
   c. supper

10. If your child takes an intermediate-acting insulin, such as __________, before supper, the blood sugar check that would tell you how well this insulin has done its job on the blood sugar would be the one done before –
    a. breakfast
    b. bedtime
    c. supper

11. If you take a fast- or rapid-acting insulin, such as __________, before breakfast, the blood sugar check that would tell you how well this insulin has done its job on the blood sugar would be the one done before –
    a. breakfast
    b. bedtime
    c. noon time
12. If you take an intermediate-acting insulin, such as ________________, before breakfast, the blood sugar check that would tell you how well this insulin has done its job on the blood sugar would be the one done before –
   a. bedtime
   b. breakfast
   c. supper

13. **Situation**: Learning how to look at blood sugar patterns in the record book.

   You’ve been at home now for a couple of weeks. This is what you have recorded.

<table>
<thead>
<tr>
<th>Date</th>
<th>Blood Sugars</th>
<th>Insulin</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Breakfast</td>
<td>Noon</td>
<td>Supper</td>
</tr>
<tr>
<td>Day 1</td>
<td>10.6</td>
<td>3.2*</td>
<td>15.6</td>
</tr>
<tr>
<td>Day 2</td>
<td>8.6</td>
<td>3.8*</td>
<td>10.3</td>
</tr>
<tr>
<td>Day 3</td>
<td>7.6</td>
<td>3.1*</td>
<td>18.6</td>
</tr>
<tr>
<td>Day 4</td>
<td>6.6</td>
<td>3.2*</td>
<td>12.2</td>
</tr>
</tbody>
</table>

   a) What are the **patterns** of blood sugars that you see?

   For example, are the blood sugars before breakfast generally in target range, below target range or above target range? You can color them with different colors if this would help to see the patterns easier.

   Do the same exercise for lunch, supper and bedtime readings.

   Where are the blood sugars the lowest? Where are they the highest?
Meal Planning

Measurement Conversion

250ml = 1 cup

60ml = 1/4 cup

125ml = 1/2 cup

2.5cm = 1 inch

2.5cm = 1 inch
Which Foods and Beverages make Blood Sugar?

The carbohydrate in food and beverages we take in, changes into blood sugar after digestion. The goal of treatment is a balance between carbohydrate and insulin & activity.. This balance aims to get the blood sugars in target & helps avoid too many high or low blood sugars. To get this balance, a meal plan is made.

Type 1 Diabetes cannot be managed by reducing or omitting the carbohydrate in the diet. Insulin and the carbohydrate are matched to work together to manage the blood sugar.

The meal plan will provide amounts of food at regular times through the day. The type and amount of carbohydrate your child eats should be about the same from day to day. When the carbohydrate is consistent, the sugar coming into the bloodstream after meals and snacks can be balanced with the insulin. This makes determining the correct insulin dose possible.

Spreading food out across the day into small main meals and between-meal snacks makes a smaller rise in the blood sugar at any one time. A smaller rise in blood sugar allows the available insulin to work better.

Other than heavily-sweetened foods, your child will be able to eat the same food as other family members. You will not need to make separate meals. The dietitian can help you to include favorite family recipes in the meal plan.

Learning How to Read Labels

The portion size is declared and total carbohydrate in grams for that portion is what you work with.

<table>
<thead>
<tr>
<th>Nutrition Facts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portion = ½ cup</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Serving Size: (Portion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• All of the information on the label is based on this portion size. This may not be your child’s portion.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Carbohydrate (CHO):</th>
</tr>
</thead>
<tbody>
<tr>
<td>• This shows the total grams of carbohydrate in the portion declared.. The CHO from sugar, starch and fibre is included.</td>
</tr>
</tbody>
</table>
RULE:

Subtract the amount of fibre from the carbohydrate amount. This will represent the carbohydrate available to make blood sugar.

Sugar Substitutes:

- If mannitol, sorbitol, xylitol or polydextrose are listed on the label, subtract their amount from the total CHO.
- CAUTION – these sugar substitutes may cause cramps, diarrhea.

Your Meal and CHO Schedule

Fill in the times & Carbohydrate Targets

Breakfast Time: __________
Morning Snack Time: __________
Lunch Time: __________
Afternoon Snack Time: __________
Supper Time: __________
Bedtime Snack Time: __________
CARBOHYDRATE CHOICES

Use the Nutrition Facts label on food packages to be accurate.

**STARCH FOODS**

These contain approximately 15 grams of carbohydrate per portion.

<table>
<thead>
<tr>
<th>STARCH FOODS</th>
<th>Carbohydrate per Portion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bagel</td>
<td>¼ large</td>
</tr>
<tr>
<td>Beans, kidney,</td>
<td>½ cup</td>
</tr>
<tr>
<td>garbanzo</td>
<td></td>
</tr>
<tr>
<td>Bread</td>
<td>1 slice</td>
</tr>
<tr>
<td>Corn</td>
<td>½ cup</td>
</tr>
<tr>
<td>Dinner roll</td>
<td>1 small</td>
</tr>
<tr>
<td>Pasta or noodles,</td>
<td>½ cup</td>
</tr>
<tr>
<td>cooked</td>
<td></td>
</tr>
<tr>
<td>Potato, baked or</td>
<td>1 small</td>
</tr>
<tr>
<td>boiled</td>
<td></td>
</tr>
<tr>
<td>Rice, cooked</td>
<td>1/3 cup</td>
</tr>
<tr>
<td>Texas Toast</td>
<td>½ slice</td>
</tr>
<tr>
<td>Tortilla, flour</td>
<td>1 – 6 inch</td>
</tr>
</tbody>
</table>

**SNACK FOODS**

These contain approximately 15 grams of carbohydrate per portion.

<table>
<thead>
<tr>
<th>SNACK FOODS</th>
<th>Carbohydrate per Portion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graham crackers,</td>
<td>3</td>
</tr>
<tr>
<td>squares</td>
<td></td>
</tr>
<tr>
<td>Dad&quot;s ™ cookies</td>
<td>2</td>
</tr>
<tr>
<td>Pretzels, small</td>
<td>15</td>
</tr>
<tr>
<td>Bite-size tortillas</td>
<td>15</td>
</tr>
<tr>
<td>Rice cakes, large</td>
<td>2</td>
</tr>
<tr>
<td>Teddy Graham ™</td>
<td>15</td>
</tr>
</tbody>
</table>

**MILK - These contain approximately 6 gm carbohydrates/portion**

<table>
<thead>
<tr>
<th>MILK</th>
<th>Carbohydrate per Portion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk, chocolate</td>
<td>¼ cup</td>
</tr>
<tr>
<td>Milk skim, 1%, 2%,</td>
<td>½ cup</td>
</tr>
<tr>
<td>soy</td>
<td></td>
</tr>
<tr>
<td>Yogurt</td>
<td>Check label</td>
</tr>
<tr>
<td>Ice cream</td>
<td>Check label.</td>
</tr>
</tbody>
</table>
### FRUITS/VEGETABLES FOODS
- These contain approximately 10 gm carbohydrates/portion

<table>
<thead>
<tr>
<th>Food</th>
<th>Portion</th>
<th>Approximate Carbohydrates (gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>½ med</td>
<td>Applesauce, unsweetened ½ cup</td>
</tr>
<tr>
<td>Apricots (fresh)</td>
<td>2</td>
<td>Banana ½ small</td>
</tr>
<tr>
<td>Berries</td>
<td>½ cup</td>
<td>Canned fruit in juice ½ cup</td>
</tr>
<tr>
<td>Cantaloupe or honeydew</td>
<td>1 cup</td>
<td>Cherries/grapes 15</td>
</tr>
<tr>
<td>Fruit juice, unsweetened</td>
<td>½ cup</td>
<td>Kiwi 2 small</td>
</tr>
<tr>
<td>Mango</td>
<td>½ cup</td>
<td>Orange 1 small</td>
</tr>
<tr>
<td>Peach or Nectarine</td>
<td>1 medium</td>
<td>Pear ½ medium</td>
</tr>
<tr>
<td>Plum</td>
<td>2 small</td>
<td>Raisins 2 tablespoons</td>
</tr>
<tr>
<td>Strawberries</td>
<td>1 cup</td>
<td>Watermelon 1 cup</td>
</tr>
<tr>
<td>Peas, carrots, mixed vegetables</td>
<td>½ cup each</td>
<td>Fruit To Go™ 1</td>
</tr>
</tbody>
</table>

#### OTHER CARBOHYDRATE CHOICES

<table>
<thead>
<tr>
<th>Food</th>
<th>Approximate Carbohydrates (gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Corn dog</td>
<td>15</td>
</tr>
<tr>
<td>4 fish sticks</td>
<td>15</td>
</tr>
<tr>
<td>1 slice medium pizza</td>
<td>45</td>
</tr>
<tr>
<td>1 Pizza Pop ™</td>
<td>30</td>
</tr>
<tr>
<td>4 chicken nuggets</td>
<td>15</td>
</tr>
<tr>
<td>1 chicken breast</td>
<td>15</td>
</tr>
<tr>
<td>1 small french fries</td>
<td>30</td>
</tr>
<tr>
<td>1 hamburger or cheeseburger</td>
<td>30</td>
</tr>
<tr>
<td>1 – 591 ml bottle Gatorade</td>
<td>40</td>
</tr>
<tr>
<td>1 355ml can regular pop</td>
<td>45</td>
</tr>
<tr>
<td>1 granola bar</td>
<td>15 -20</td>
</tr>
</tbody>
</table>

Continued on following page
### More Food Choices

Listed below are other foods that contain negligible carbohydrate. These are important for good nutrition and overall health.

### Protein

- Contain very little carbohydrate.
- Slows the digestion of carbohydrates. Blood sugar rises more slowly.
- Provides protein to help your child grow and helps build strong muscles.

<table>
<thead>
<tr>
<th>Beef</th>
<th>Fish/seafood</th>
<th>Turkey</th>
<th>Cheese</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peanut butter</td>
<td>Tofu</td>
<td>Chicken</td>
<td>Pork</td>
</tr>
<tr>
<td>Cold cuts</td>
<td>Egg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Fats

- Contain very little carbohydrate.
- Slows the digestion of carbohydrates. Blood sugar rises more slowly.
- Provide calories and essential fatty acids to help your child grow.
- Eating too much fat can be unhealthy and cause excess weight gain.

<table>
<thead>
<tr>
<th>Butter</th>
<th>Peanuts &amp; nuts</th>
<th>Cooking oil</th>
<th>Margarine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salad dressing</td>
<td>Cream cheese</td>
<td>Gravy</td>
<td>Sunflower seeds</td>
</tr>
<tr>
<td>Bacon</td>
<td>Spreadable cheese</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Vegetables

- Contain very little carbohydrate.
- They contain vitamins, minerals and fibre.
- Some fibres slow digestion so the blood sugar rises more slowly.

<table>
<thead>
<tr>
<th>Vegetables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broccoli</td>
</tr>
<tr>
<td>Mushrooms</td>
</tr>
<tr>
<td>Eggplant</td>
</tr>
<tr>
<td>Cauliflower</td>
</tr>
<tr>
<td>Peppers</td>
</tr>
<tr>
<td>Zucchini</td>
</tr>
<tr>
<td>Celery</td>
</tr>
<tr>
<td>Onions</td>
</tr>
<tr>
<td>Spinach</td>
</tr>
<tr>
<td>Cucumbers</td>
</tr>
<tr>
<td>Asparagus</td>
</tr>
<tr>
<td>Green &amp; Yellow Beans</td>
</tr>
<tr>
<td>Lettuce</td>
</tr>
<tr>
<td>Tomatoes</td>
</tr>
<tr>
<td>Radishes</td>
</tr>
<tr>
<td>Cabbage</td>
</tr>
<tr>
<td>Pea Pods</td>
</tr>
</tbody>
</table>

How Quickly do Foods and Drinks Raise Blood Sugar?

![Graph showing blood sugar levels over time for different food groups: Liquid sugar, fruit, starch, milk, protein, fat/oil. Liquid sugar peaks immediately, followed by fruit, starch, milk, protein, and fat/oil over the course of 4 hours.]

- **Liquid sugar**: fruit juice and drinks, pop, Slurpee®, iced coffee drinks
- **Fruit**: slower than fruit juice

Blood Sugar

Time (hours)
Practise!!

Example Meal 1:

3 small potatoes = 45 gms carbohydrate
1 - 6” banana = 20 gms carbohydrate
250 ml milk = 12 gms carbohydrate

Meal Target 77 gms carbohydrate
(+ protein / fat / extras)

Example Meal 2:

1 cup cooked Kraft Dinner = 50 gms carbohydrate
1 orange = 10 gms carbohydrate
3 mini carrots = 5 gms carbohydrate
250 ml milk = 12 gms carbohydrate

Meal Target 77 gms carbohydrate
(+ protein / fat / extras)

How fast does carbohydrate raise blood sugar?

Some carbohydrate foods and drinks raise the blood sugar very quickly. They contain fast acting sugars.

> Glucose tablets  > Regular pop  > Fruit juices  > Fruit drinks
> Slurpees       > Candies      > Jam        > Honey
> Syrup          > Sugar        > Sugar syrups used in sweet coffees

NOTE: These choices are used to treat low blood sugar because they are fast when taken alone.
Why is it Important to Eat Meals and Snacks On Time?

Each meal and snack raises the blood sugar by a certain amount and at a certain rate. Injected insulin is released into the bloodstream over several hours. Each insulin type has specific peak action times. The action of insulin must be balanced with the carbohydrate eaten at regular times.

Blood sugar is better controlled when meals and snacks are eaten within ½ hour of the usual time. You can handle a delay of about one hour by giving your child about 15 – 20 gm carbohydrate as starch or fresh fruit borrowed up from the meal.

HOW IS THE MEAL PLAN ARRANGED?

The dietitian will estimate your child’s usual foods and amounts eaten. Carbohydrate targets will be arranged to suit his appetite and provide for normal growth. The targets will meet individual likes and dislikes, lifestyle, activity level and nutritional needs. The targets should be easily incorporated into your child & families life.

The carbohydrate targets may need frequent changes soon after diagnosis. Your child’s body may be ‘catching up’ from a period of poor growth or weight loss. Many parents notice that their child is eating more than usual for the first few weeks after starting on insulin. You may find that the amount of carbohydrate becomes too much three or four weeks after discharge. The targets and the insulin amounts will need to change.

After becoming comfortable with carb portioning, you will soon learn how to be more flexible, with food portions at insulin times by using an insulin to carb ratio.

What is an Insulin Carb Ratio?:

Your physician will give you the ratio after you have become quite practiced in carb counting. This ratio indicates the amount of carbs that is covered by 1 unit of fast acting insulin. An example may be ICR 1:15 gm.

If you expect your child wishes to eat more or less than the target carbohydrate that meal, you would measure 1 unit fast acting insulin
onto the usual meal insulin amount for each 15 gm carbohydrate more than or less than the target.

If the target meal is 77 gm (+/- 5 gm) and you expect the meal portion=90, you would draw up a unit fast acting insulin more than usual. If the meal portion your child expects to eat =105, you would draw up 2 more fast acting insulin units more than usual.

If your child is not having a high carbohydrate meal, and wishes more meat/non carb veg you would take this ratio in the reverse.

Example: your child is expecting to eat 60 gm instead of the usual 77 gm, you would measure 1 unit fast acting insulin less than the usual amount for that meal.

Activity Guidelines:

- Activity will “burn” carbohydrates and lower blood sugar.
- Plan on your child having 10 grams of fast acting carbohydrate for every half-hour of activity. This is “bonus” carbohydrate.
- This is taken before activity so the blood sugar doesn’t drop too low.

In the beginning, you may find you want to check your child’s blood sugar before, during and after activity to see how it affects the blood sugar. You may then find that you can adjust the amount of carbohydrate or insulin at the time of activity.

Helpful Food Resources:

- http://calorieking.com
- http://www.myfitnesspal.com
- Diabetes App lite – designed by BHI Technologies for both iphone and ipad available through the App Store.
Pause to Reflect . . .

1. Use the enclosed “Let’s Make a Menu” thinking of the food available in your home now. Record the meals and snacks and make 4 sample menus.

2. Make a grocery list of the items needed for these sample menus.

3. Your child is invited to a birthday party after school. How would you handle this?

4. Your family has decided to go to MacDonald’s for supper. What can your child choose to fit the carbohydrate targets?

5. Your child’s blood sugar is 3.0 before school lunch. What does your child need to do? Who will help?

6. Your child has hockey practice after supper. What carbohydrate changes would you make?

7. The blood sugar is 3.2 after hockey practice at 8:30 pm. What snack would you provide?
# LET'S MAKE A MENU

<table>
<thead>
<tr>
<th>MEAL</th>
<th>DAY 1</th>
<th>DAY 2</th>
<th>DAY 3</th>
<th>DAY 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
<td>gms carb.</td>
<td>gms carb.</td>
<td>gms carb.</td>
<td>gms carb.</td>
</tr>
<tr>
<td>AM snack</td>
<td>gms carb.</td>
<td>gms carb.</td>
<td>gms carb.</td>
<td>gms carb.</td>
</tr>
<tr>
<td>Noon</td>
<td>gms carb.</td>
<td>gms carb.</td>
<td>gms carb.</td>
<td>gms carb.</td>
</tr>
<tr>
<td>PM snack</td>
<td>gms carb.</td>
<td>gms carb.</td>
<td>gms carb.</td>
<td>gms carb.</td>
</tr>
<tr>
<td>Supper</td>
<td>gms carb.</td>
<td>gms carb.</td>
<td>gms carb.</td>
<td>gms carb.</td>
</tr>
<tr>
<td>Bedtime snack</td>
<td>gms carb.</td>
<td>gms carb.</td>
<td>gms carb.</td>
<td>gms carb.</td>
</tr>
</tbody>
</table>
Activity
Activity

1. **Activity may lower the blood sugar level.**

   During activity, muscles burn sugar for energy. During and/or after activity, the blood sugar level can fall. Your child will need to plan how to prevent low blood sugar using “bonus carbs”, although expect that some low blood sugar will occur.

2. **Regular activity helps the available insulin work better.**

   During and/or after activity, sugar enters the cells more rapidly.

3. **Activity improves health and fitness.**

   Improved muscle strength, flexibility, stamina, circulation and feelings of well being are all advantages of regular activity. Participation in normal school activities is important to help develop a sense of belonging and self esteem.

How to Prevent Frequent Low Blood Sugars with Activity

1. Have your child take “bonus” carbohydrate before or during the activity.

2. Check blood sugar after activity. This will help you find the amount of extra carbohydrate needed for that activity. For example, after activity, you may find the blood sugar is higher than usual. Next time, decrease the amount of “bonus” carbohydrate taken for that activity. Or, you may find the blood sugar may be too low (below 4 mmol/L) after activity. Next time, have your child increase the “bonus” carbohydrate before or during the activity.

3. Reduce the insulin before activity, instead of giving extra carbohydrate for a planned activity. In time, you will have the experience to make the insulin changes on your own.
Some children will find it difficult to take enough carbohydrate before activity. Reducing the insulin dose is another way to handle extra activity.

4. Sometimes, low blood sugar occurs several hours after the activity is finished. Low blood sugar is common 1-4 hours after exercise & again 7-12 hours after exercise.

This occurs because the muscles replace the sugar stores used up during the activity, by removing blood sugar. After an active day, it is necessary to check blood sugar level at bedtime. You may find you need to make an adjustment by adding more carbohydrate or taking less insulin.

**How Much Extra Carbohydrate is Needed for Activity**

These guidelines are a place to start. As a general rule, some extra fast acting carbohydrate is needed before activity.

For example: 30 minute gym class. Your child should take an extra “Fruit to Go” or 125 ml unsweetened juice (10 gms carbohydrate) before the gym class. Blood sugar checks done after the activity will help you decide how much carb is needed. Use extra checking when you need some feedback about how things are working. It will take some time and experience to know how the blood sugar will respond to activity.
For Strenuous Activity (i.e. hockey, soccer, swimming, running, skiing)

- Start by trying 10 gms for every ½ hour of activity. With experience, you may need to adjust this amount.

How Should Longer Periods of Activity be Handled?  
(i.e. Hockey Tournaments, Skiing Trip)

It is likely that your child will need more carbohydrate for the whole period. This may be done with a snack every hour. Even with the extra carbohydrate, your child may also need less insulin. Your Diabetes Team’s advice, your experience and some extra blood sugar checking will provide the necessary information.

Where to Inject the Insulin Before Activity

Insulin is absorbed more quickly during activity. Injecting insulin into an exercising muscle is not recommended. For example, on the day of a vigorous gym class or a track meet, inject insulin in the abdomen rather than in the legs. Longer acting insulins (Lantus or Levemir) is not affected by exercising muscle.

Be Prepared to Treat Low Blood Sugars

The effects of the intensity and duration of activity on the blood sugar level are not always predictable. A low blood sugar may still occur, despite changing insulin or giving extra carbohydrate. Be sure to have fast acting carbs available. Follow the guidelines in the Low Blood Sugar chapter.

When Not to be Active

When high blood sugar exists, strenuous activity may cause blood sugar to increase still further. When there is not enough insulin, the liver will release sugar into the blood stream. Body fat is used instead as a fuel source. Ketones may form.

When the blood sugar is over 17 mmol/L, check the urine or blood ketones. If the blood sugar is over 17 and the urine ketone test is positive, do not be active. This situation can commonly occur during sick days. More insulin may be required. See “Illness” chapter.
What Else Do We Need to Know About Being Active

Coaches and gym teachers should know that your child has diabetes. They need information about low blood sugar – symptoms, treatment and preventive measures.

Meet with the coach/teachers. *Ask them to keep you informed about the timing of activities.

Also ask the coach or teachers to let you know if your child is experiencing low blood sugar during activities.

* Send a fast acting carb source with your child.

Some types of activity may actually raise blood sugar!

You may notice sports with intense bursts of activity ex hockey, or those that are quite competitive may increase blood sugars during the time of the exercise. Frequent testing will assist in knowing if/how much carbs or insulin adjustment is needed.
Pause to Reflect . . .

1. What activities does your child participate in?

2. For each activity, how will you help your child prepare?

3. If the blood sugar is too low after an activity, what will you do differently next time?
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</td>
</tr>
<tr>
<td>. nervousness</td>
<td>(if treatment is delayed, &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></th>
<th>STAGE 1</th>
<th>STAGE 2</th>
<th>STAGE 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SIGNS</strong></td>
<td>Sweating</td>
<td>Irritability</td>
<td>Unconsciousness</td>
</tr>
<tr>
<td><strong>SYMPTOMS</strong></td>
<td>Shaking</td>
<td>Blurred/double vision</td>
<td>Possible convulsions/seizures</td>
</tr>
<tr>
<td></td>
<td>Palpitations</td>
<td>Confusion</td>
<td>Alcohol</td>
</tr>
<tr>
<td></td>
<td>Hunger</td>
<td>Poor coordination</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Palor</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>
<tr>
<td></td>
<td></td>
<td>Sleepiness</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Slurred speech</td>
<td></td>
</tr>
<tr>
<td><strong>LEVEL OF</strong></td>
<td>Able to identify and treat symptoms by self if child is old enough (Parents to identify in young child)</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>
<tr>
<td><strong>AWARENESS IN CHILD</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TREATMENT</strong></td>
<td>10 gms of fast acting carbohydrate.</td>
<td></td>
<td>May choke if fluids forced.</td>
</tr>
<tr>
<td></td>
<td>➢ 2½ Dex4 tablets</td>
<td>➢ 2½ Dex4 tablets</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>➢ 1½ Rocket rolls</td>
<td>➢ 1½ Rocket rolls</td>
<td>If no Glucagon available or has expired (check regularly), call ambulance (911). Go to nearest hospital.</td>
</tr>
<tr>
<td></td>
<td>➢ 10 Skittles</td>
<td>➢ 10 Skittles</td>
<td></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 <strong>regular</strong> 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 <strong>regular</strong> soft drink</td>
<td></td>
</tr>
<tr>
<td></td>
<td>➢ 125ml <strong>unsweetened</strong> orange juice</td>
<td>➢ 2 teaspoons of honey or corn syrup</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>➢ 125ml <strong>unsweetened</strong> orange juice</td>
<td></td>
</tr>
<tr>
<td><strong>PREVENTION</strong></td>
<td>Measure insulin accurately. Supervise child</td>
<td>Teach family / friends how to help child</td>
<td>Don’t postpone early treatment. Never miss a meal when insulin has been given</td>
</tr>
<tr>
<td></td>
<td>Meals, snacks on time. Extra carbs for extra exercise, (10 gms carbo), every ½ hour of activity. Learn to recognize the early signals. Carry ‘fast-acting’ sugar.</td>
<td>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>Careful attention to measuring insulin. Contact doctor if several low blood sugars occur with no known reason.</td>
</tr>
</tbody>
</table>

*BC Children’s Hospital Protocol- Adapted from “Diabetes & You”, a Manual for Children, Parents & Caregivers, B.C. Children’s Hospital*
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.
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>IF 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.laurenshope.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>4-13</td>
<td>Wait. Monitor at frequency in #1 above. <em>See rules below for blood sugars under 7.</em></td>
<td>Wait Monitor at frequency in #1 above.</td>
<td>Can give extra short or rapid-acting insulin every 3 - 4 hours, about 10%-20% of the total daily dose until blood sugar is below 20 and ketones are less than moderate (less than 8). See bottom box “Calculating total daily dose of insulin.”</td>
<td></td>
</tr>
<tr>
<td>14-20</td>
<td>Wait Monitor at frequency in #1 above. Follow directions below.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Above 20</td>
<td></td>
<td>Small or less (less than 8)</td>
<td>Moderate or more (8 or more)</td>
<td></td>
</tr>
<tr>
<td>Above 13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Urine Ketones | What to do with the insulin dose | What to eat or drink | |
|---------------|---------------------------------|---------------------|
| Small or less | Wait. Monitor at frequency in #1 above. *See rules below for blood sugars under 7.* | Try to use usual meal plan. | |
| Small or less | Wait Monitor at frequency in #1 above. | If not able, switch to a fluid meal plan. This means drinking/eating 15 gms of carbohydrate each hour plus “extra fluids” (no carbohydrate) | |
| Small or less | Can give extra short or rapid-acting insulin every 3 - 4 hours, about 10%-20% of the total daily dose until blood sugar is below 20 and ketones are less than moderate (less than 8). See bottom box “Calculating total daily dose of insulin.” | 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. | |
| Small or less | | * 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. | |
| Small or less | | 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 __________
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 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
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, daycare, 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 who 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 …

**Canadian Diabetes Association**

→ Canadian Diabetes Association - 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.**

Stay a step ahead of the Diabetes Dragon…

*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.

2016 – Clare and David’s daughter is now 24 years old!
The Diabetes Team wishes you well in your diabetes care.

LiveWell Pediatric Diabetes Program
Saskatoon Health Region
Royal University Hospital
103 Hospital Drive
Saskatoon, SK S7N 0W8
Ph: (306) 655-2199 Fax: (306) 655-6758