

# McNeely Pediatric Diabetes Center Diabetes care manual



[childrensMN.org](http://childrensMN.org)

The McNeely Pediatric Diabetes Center is located on the fourth floor of the Garden View Medical Building at Children's – St. Paul:

Address:  
347 N. Smith Ave.  
St. Paul, MN 55102

Hours: Monday–Friday, 8 a.m. to 4:30 p.m.  
Phone: 651-220-6624  
Fax: 651-220-6064  
Appointments: 651-220-6818

## Calling the clinic

*In a life-threatening emergency, call 911.*

When calling the clinic, please listen to all of the recorded options before making a selection.

- Press option 1) to schedule or change an appointment.
- Press option 2) for all diabetes-related calls, including blood sugar and pump management.
- Press option 3) for endocrine concerns, including endocrine prescription refills.
- Press option 4) if your child is ill.

If your child has an illness not related to diabetes, please call your primary health care provider.

## All diabetes-related calls

A diabetes nurse educator will answer all diabetes calls and return your call as soon as possible. Please leave your name, phone number, and child's full name and date of birth, and describe your concern. Calls are answered regularly throughout the day. Staff will make every effort to return the call in a timely manner.

## Ill-child calls

Please leave your name, phone number, and child's full name and date of birth. Tell us the problem and we will make every effort to return the call within 30 minutes. If you do not receive a call back within 30 minutes, please call again.

Examples of ill-child calls:

- Your blood sugar is 80 or less and you cannot eat.
- Your blood sugar is 300 or higher and your ketones are moderate or large.
- You cannot eat or drink for more than four hours.
- You develop dry mouth, cracked lips, sunken eyes, or flushed, dry skin.
- You have an upset stomach, throw up, have stomach pains, breathe hard and fast, or have trouble staying awake.

## After-hours calls

Before 8 a.m. and after 4:30 p.m., call 651-220-6629 ext. 2, and an answering service will take your call and page the pediatric endocrinologist on-call. You should receive a call back within 30 minutes. If you do not, ask the service to page the doctor again. You should always get through to a person at the answering service. If you don't, hang up and call back again.

Please reserve this time for urgent calls only, such as those listed above. Do not call after-hours to review blood sugars, request pharmacy refills, or ask for appointments.

## Clinic fax

When faxing forms to be filled out by clinic staff, please fill out as much information as you can yourself. On a cover sheet, tell us where to mail or fax the completed form, and allow four working days for us to do the rest.

## Prescription refills

Please call your pharmacy for diabetes prescription refills.

Pharmacy phone numbers:

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# Introduction to the Diabetes care manual

We are here to help you and your family!

Staff from the McNeely Pediatric Diabetes Center understand the many questions and concerns you may have about your recent diagnosis of diabetes mellitus. We'll be here to help, from the first days in the hospital, to your return home, to managing your diabetes every day.

This book contains information that will help guide you through your diagnosis and management of diabetes. As with any map, it can't describe everything that will happen along the way. It can, however, help you prepare for your journey and direct you to resources. These resources can help give you more control to support and care for you and your family.

Many things are involved in choosing the right diabetes care plan and adjusting it over time. Our goal is to help you achieve the best possible control with the least lifestyle changes. Our staff will work with you to combine your knowledge of your child and our knowledge of diabetes to provide the best medical and emotional care possible.

This book will be your reference to help you manage diabetes at home. **Please be sure to bring this book with you to clinic visits so you can add information as you receive it.** It also is helpful to have this book available whenever you call the clinic with questions. This book is an important part of your diabetes care plan.

Throughout the book, "you" most often refers to the person with diabetes. For example, if we say "your doctor," we mean "your child's doctor" if you are the parent.

There are many things to learn when caring for diabetes. Much of this will get easier as you go along.

It's important that you feel comfortable with everything before you go home. If you don't understand something or feel uncomfortable, please talk with someone on the health care team.

**We are on this journey together.**

# What to expect from your stay

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You are in the hospital because you have recently been diagnosed with Type 1 or Type 2 diabetes mellitus. Before you go home, you'll learn the basic skills of diabetes. You'll also meet many members of your diabetes care team.

The diabetes care team will take you step by step through learning the basic skills of diabetes. These are concepts necessary to learn and perform before you return home.

**Whenever possible, all primary caregivers should learn and perform these skills. It is very important that primary caregivers be present during meals and teaching sessions.**

Primary caregivers may include parents, grandparents, and day care providers. During this time, please limit visitors so we can focus on your care.

Below is an outline of what will take place the first few days you are in the hospital. It may change, depending on your condition and the needs of your family.

Please note, typically education will start at 9:30 a.m. each day you are in the hospital. Plan to have all caregivers present and ready by this time for education. This schedule is always subject to change. Also note, if another child is diagnosed with diabetes at the same time, there may be more than one family present for education. We will, however, make every effort to make sure that any individual questions or concerns you may have are addressed during your hospital stay.

## Day 1

- Meet with your pediatric endocrinologist to talk about your diagnosis.
- Learn about diabetes, blood sugar testing, and insulin injection technique with a diabetes educator.
- Your hospital nurse will teach and help with menu selections and ketone testing.

- Call your insurance provider to talk about insurance coverage.
- Family begins performing blood sugar tests, urine tests, carb counting, and insulin shots, with help from your nurse.
- Meet with dietician and possibly meet with social worker, pharmacist and child life specialist

## Day 2 or day of discharge

- Learn basic skills, including prevention and treatment of low blood sugar (hypoglycemia) with a diabetes educator.
- Receive home schedule, school treatment authorization form and follow-up instructions from a diabetes educator.
- Follow-up appointments.
- Obtain prescriptions and supplies.
- Family performs basic skills.
- Possibly meet with dietician, social worker, child life specialist, or pharmacist, if this has not yet occurred.
- Return home.



# About Children's staff

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There are many pediatric specialists who will be involved in your diabetes care. After your initial education, you will make a clinic appointment every three months to see a diabetes provider for ongoing diabetes management. We will continue to teach you about diabetes care at these appointments.

You should continue to see your primary physician for regular health management. Below are some of the people on your care team:

**Pediatric endocrinologist:** An endocrinologist is a physician who specializes in diabetes. Several are on staff at Children's. One of these physicians will supervise your care, both in the hospital and in the outpatient clinic.

**Pediatric nurse practitioner:** The nurse practitioner will usually see your child at the two-week and six-week follow-up appointments. Many patients see the pediatric endocrinologist and pediatric nurse practitioner at alternate appointments.

**Diabetes educator:** The certified diabetes educator (CDE) will teach you the basic skills of diabetes management, adjust insulin doses and provide on-going education. You will learn about blood sugar monitoring, insulin injections, and preventing and treating low blood sugars.

**Dietitian:** The registered dietitian will teach you about diet, its relationship to diabetes control, and how to work with your individualized meal plan.

**Pharmacist:** The pharmacist will teach you about insulin and its role in diabetes management.

**Social worker:** The social worker helps families cope with diabetes by providing emotional support and information about resources at Children's and in the community.

**Child life specialist:** A child life specialist will help you understand diabetes using age-appropriate language, videos, teaching dolls, books, and more. The specialist also may teach relaxation and distraction techniques to help reduce stress or anxiety about needles or other fears.



# Terminology

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**Antibodies:** Antibodies are produced in the body as part of the autoimmune process. They are responsible for beta-cell destruction.

**Assessment phase:** A period of extra testing (usually 3-5 days) of extra blood sugar checks, at specific times, detailed documentation of blood glucose, carbohydrate, insulin doses, and activities. The purpose is for gathering more data for insulin adjustment or when starting a new insulin regime.

**Beta cells:** The small insulin-producing cells in the pancreas.

**Bolus:** A dose of insulin given for food or correction of high blood sugar.

**Carbohydrates:** A component of food. All carbohydrates are converted to sugar that is used to provide energy to every part of your body. Some people with diabetes need to take insulin when eating carbohydrates.

**Carbohydrate counting:** A process of adding up the carbohydrate content of a meal or snack. People with diabetes use that total with their insulin ratio (dose prescribed by doctor) to calculate the insulin dose.

**Celiac disease:** A condition that damages the lining of the small intestine and prevents it from absorbing parts of food that are important for staying healthy. The damage is due to a reaction to eating gluten, which is found in wheat, barley, rye, and possibly oats.

**Dehydration:** Dehydration happens when body fluids are used and not replaced. Increased urination and vomiting can lead to dehydration.

**Fat:** A component of food. Fat does not convert to sugar when eaten. When fat is eaten with a carbohydrate, it will slow the absorption of carbohydrates.

**Free foods:** Foods that contain little or no carbohydrate and can be eaten without needing extra insulin. Examples are lunch meat, cheese, and vegetables.

**504 plan:** A form that lists the care for a child with diabetes will need at school.

**Glucagon:** A hormone that raises blood sugar. It is given in the form of an injection for severe hypoglycemia.

**Glucose:** What is created when the body breaks down carbohydrates for energy. The terms blood glucose and blood sugar have the same meaning.

**Hypoglycemia:** Blood sugar that is too low.

**Hyperglycemia:** Blood sugar that is too high.

**Hemoglobin A<sub>1C</sub>:** A blood test that measures overall diabetes control. It is measured every three months as part of routine diabetes care.

**Insulin:** A hormone, produced in the pancreas, that helps the cells throughout the body use sugar from the bloodstream.

**Insulin (rapid, such as Apidra®, Humalog®, and NovoLog®):** This type of insulin starts to work in 10 to 15 minutes. It works hardest (peak) in 30 to 90 minutes and is done working in the body in 2 to 3 hours. This type of insulin is designed to copy the insulin produced by the body when food is eaten.

**Insulin (“peak-less” long-acting, such as Lantus® or Levemir®):** This type of insulin starts to work in four hours. It does not have a peak and is done working in the body in 24 hours.

**Insulin pump:** A small computerized device that holds and delivers insulin according to programmed or prescribed insulin doses.

**Individual health plan:** A plan written by a school nurse, caregiver, and health care provider that outlines diabetes cares at school.

**Insulin resistance:** This happens when the body is not able to use insulin efficiently.

# Terminology

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**Ketones:** Ketones are the by-product of fat breakdown. When insulin or carbohydrate needs are not being met, the body breaks down fat and ketones are produced. When ketones build up, they spill into the urine. A high level of ketones can cause vomiting and illness.

**Lancet:** The device used to poke the finger to measure blood sugar.

**Pancreas:** An organ in your body near the stomach. The pancreas has several functions. It produces hormones to help digest food and contains cells that make insulin.

**Pattern management:** A method of looking at blood sugar readings and the factors that affect blood sugar to correctly adjust insulin doses.

**Protein:** A component of food. Unless eaten in large quantities, protein does not have an effect on blood sugar readings.

**Rebound:** This happens when high blood sugar follows a low blood sugar. The high blood sugar is caused by a response in the body of releasing stored sugar.

**Syringe:** The device used to measure and give insulin shots.

**Target blood sugar range:** A goal range where your blood sugar should be about 50 percent of the time.

**Type 1 diabetes:** Also called “juvenile onset” or “insulin-dependent” diabetes. This type of diabetes is caused by an autoimmune process. The pancreas stops making insulin and insulin injections must be given to treat this disease.

**Type 2 diabetes:** Also called “adult onset” or “non-insulin-dependent” diabetes. With this type of diabetes, the pancreas still produces insulin but the insulin doesn’t work properly. Treatment options may include diet, exercise, medication, and sometimes insulin.





# What is diabetes?

Diabetes is a condition in which the body cannot use the sugar (carbohydrates) from food that is eaten. The body doesn't make or properly use a natural hormone, called insulin.

When you eat, the carbohydrates in your food are broken down into sugar, which your body uses for energy. Insulin, a hormone made in the pancreas (an organ near the stomach), helps the cells throughout the body absorb sugar from the bloodstream.

If you have diabetes, your body cannot use the sugar, either because it doesn't make enough insulin or the insulin it makes doesn't work right. Since the sugar is not absorbed into the body, it goes into the urine and leaves the body. The cells of the body are not able to use the sugar and begin to starve.

Once insulin is given, the blood sugar is lowered and the body is able to use the sugar for energy and growth.



## The two types of diabetes

### Type 1 diabetes

Type 1 diabetes is also called juvenile-onset or insulin-dependent diabetes.

With Type 1 diabetes:

- the pancreas stops making insulin. We do not know exactly why this happens, but it is an autoimmune process: the immune system makes a mistake and destroys the insulin-making cells in the pancreas.
- insulin must be given to treat this disease.
- insulin is a protein; if taken by mouth, it would be digested and therefore not effective. Therefore, people with Type 1 diabetes require insulin injections each day.

### Type 2 diabetes

Type 2 diabetes is also called adult-onset or non-insulin-dependent diabetes.

With Type 2 diabetes:

- the pancreas produces insulin, but the insulin doesn't work properly.
- treatment options for this type of diabetes include diet, medication, and sometimes insulin.

# Understanding type 1 diabetes

Type 1 diabetes occurs when the pancreas stops making insulin, the hormone that helps the body absorb sugar from the bloodstream. The other jobs that the pancreas does, such as helping digest your food, are not affected.

Without insulin, the sugar is not absorbed. Instead, it travels through the bloodstream (where it can be measured as high blood sugar), gets filtered by the kidneys, and passes out through the urine.

People with type 1 diabetes do not have enough insulin. They will urinate (pee) often, even at night, and are very thirsty. Tiredness and weight loss may also occur, depending on how long the blood sugar has been high.

The warning signs of type 1 diabetes are drinking and urinating a lot, weight loss, and low energy.

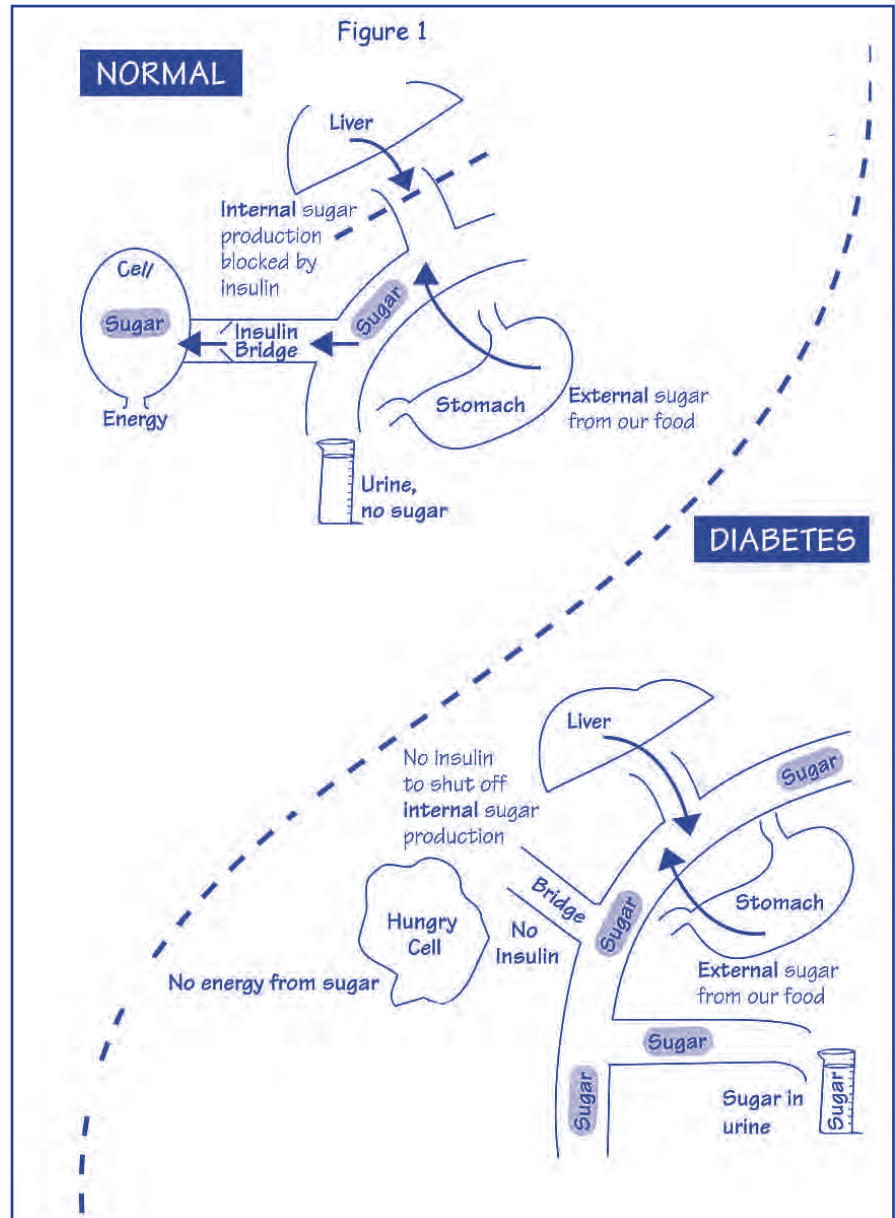
## Causes of type 1 diabetes

Type 1 diabetes sometimes runs in families. However, the majority of people diagnosed have no close relative with type 1 diabetes. It is not caused by eating or drinking too much sugar. Sometimes an illness such as a cold or flu can make the symptoms of diabetes more obvious. There is nothing anyone can do to stop Type 1 diabetes from developing.

People with type 1 diabetes develop antibodies to the insulin-producing cells in the pancreas. These antibodies signal that those cells are being destroyed. We do not know why these antibodies appear. We do know that replacing insulin usually produced in the body with insulin injections will help the body use food for energy and stay healthy.

Figure 2.1

## Why insulin is needed



# Understanding type 1 diabetes

## Causes of type 1 diabetes

Type 1 diabetes develops gradually, over many months or many years. It does not just come on suddenly in a week or two before the elevated blood sugars.

Many insults (represented by arrows in the graph below) likely result in further damage until the diagnoses of diabetes is made. The insults may include viral infections, stress, chemicals in the diet, or other agents. These agents may work by “activating” antibodies causing injury and destruction of the insulin-producing cells (beta cells). However, a genetic predisposition (inherited factors) must be present for the process to start.

Overtime the beta cells continue to be damaged until no insulin is produced.

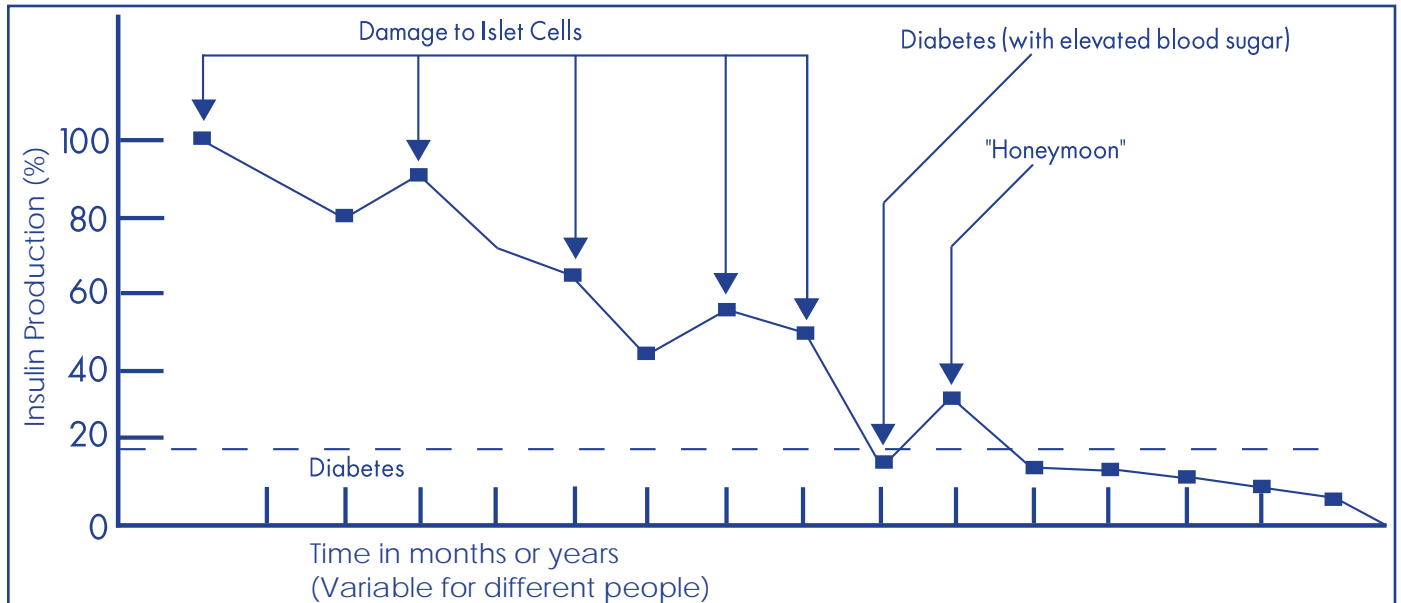
## Managing type 1 diabetes

Type 1 diabetes is managed by giving insulin injections. There are several different combinations of long- and short-acting insulin that the education team will teach you about. All current medical data shows that people with type 1 diabetes will need insulin every day for the rest of their lives.

For many children, a few weeks after starting insulin therapy, a “honeymoon” period begins. For a short time, the remaining insulin-producing cells (beta cells) in the pancreas make insulin and a smaller amount of insulin shots will be needed. This can last from a few weeks to one year. There is no test to determine how long the honeymoon period will last.

Figure 2.2

### The gradual onset of type 1 diabetes



# Understanding type 2 diabetes

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People who have type 2 diabetes are resistant to the insulin they make. Because the insulin produced by the pancreas is not working properly, the body needs more insulin to help sugar get into the cells. This type of diabetes is more common in adults. However, people who are overweight or who have other family members with type 2 diabetes may develop it at any age.

The warning signs of type 2 diabetes are similar to type 1 diabetes since the blood sugar levels are high in both conditions. People with type 2 diabetes drink and urinate a lot and often have weight loss and low energy.

## Causes of type 2 diabetes

Type 2 diabetes runs in families more commonly than type 1. Also, it is more common in certain ethnic groups (African American, Native American, Hispanic, Asian, and Pacific Islander).

There are risk factors for type 2 diabetes that people can control unlike type 1 diabetes. These high-risk lifestyle factors include inactivity and a high-fat, high-sugar diet.

Make sure you get plenty of exercise (30 to 60 minutes every day) and eat foods that are low in fat and sugar. Avoid concentrated carbohydrates. (See section 5 “Nutrition and Meal Planning” for more information.)

If you have several family members with type 2 diabetes or if you had diabetes when you were pregnant, it is especially important to take control of these lifestyle factors.

For people who have type 2 diabetes already, taking control of these lifestyle factors is an important part of controlling blood sugar and decreasing complications.

## Managing type 2 diabetes

Often people with type 2 diabetes can control their blood sugars with oral medication (pills), exercise, and diet changes. A combination of these three can help the pancreas make more insulin and help insulin work better.

If the pancreas still cannot keep up with the high insulin demands, insulin injections may be needed. For many children with type 2 diabetes, insulin shots are necessary for initial treatment of high blood sugars.



# Diabetes mellitus complications

If either type 1 or type 2 diabetes is poorly managed over several years, complications can result. Most are related to something called microvascular disease.

Microvascular disease results when high sugar levels damage the small blood vessels of the body. This may cause problems such as retinal damage (eye problems leading to blindness), kidney problems, heart damage, impotence (sexual dysfunction in men), or nerve damage that causes numbness of the fingers and toes.

Some complications of type 2 diabetes are related to high insulin levels needed to overcome the resistance.

## Hemoglobin A<sub>1C</sub>

One of the measures of overall diabetes control is a blood test called Hemoglobin A<sub>1C</sub> (HbA<sub>1C</sub>). The HbA<sub>1C</sub> test checks average blood sugar over a three-month period (the life span of a red blood cell). Your provider will perform this test.

The test is a marker of overall diabetes control. It is a predictor of long-term complications such as eye disease, kidney disease, and heart disease. People without diabetes have HbA<sub>1C</sub> levels less than 6 percent.

It is important to set and meet your HbA<sub>1C</sub> goal, because lowering your blood sugar can reduce your risk of complications, such as blindness, kidney problems, and heart damage. The goals for children with diabetes vary based on age and insulin regimen, however they are generally\*:

- younger than 6 years: less than 8.5%, but greater than 7.5 %.
- 6 to 12 years: less than 8%.
- older than 12: less than 7.5%.

\* HbA<sub>1C</sub> goals based on American Diabetes Association standards.

Figure 2.3  
**Hemoglobin HbA<sub>1C</sub>**

The chart below shows how Hemoglobin A<sub>1C</sub> might compare with average blood sugar readings. Your HbA<sub>1C</sub> levels should be at the top of the chart to maintain good blood sugar control.

HbA <sub>1C</sub>	Average blood sugar (mg/dl)
4%*	50
5%****	80
6%*****	115
7%*****	150
8%*****	180
9%*****	210
10%*****	245
11%*****	280
12%*****	310
13%*****	345
14%*****	360

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## Diabetes basics quiz

Circle T for true or F for false.

1. T or F      Diabetes is when your body can't use the sugar from the food you eat.
2. T or F      When you have diabetes, your pancreas stops making insulin or the insulin it makes doesn't work right.
3. T or F      Diabetes is caused by eating or drinking too much sugar.
4. T or F      Insulin helps your cells absorb sugar for energy.
5. T or F      Diabetes sometimes runs in families.
6. T or F      Diabetes that is poorly managed (having high blood sugars over several years) can cause complications.

**Answers:** 1. True, 2. True, 3. False, 4. True, 5. True, 6. True

# Blood sugar testing

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When you have diabetes, it is important to know how much sugar is in your blood. Knowing the sugar level will help you decide on insulin doses and other factors that affect blood sugar.

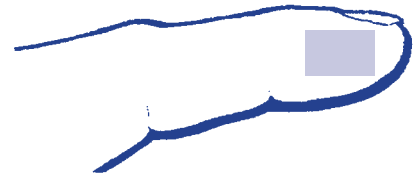
You can find out your blood sugar level by testing a drop of your blood. You will learn to poke your finger with a lancet device that will help you get a drop of blood without hurting very much.

You will test your blood sugar at least four times a day or as directed by your doctor.

## Testing procedure

1. Wash your hands with soap and water or use an alcohol hand sanitizer. If your hands are cold, run them under warm water or shake while hanging your hands at your sides. This will help to get an adequate blood sample.
2. Gather supplies:
  - blood sugar meter
  - finger-lancing device ("finger poker")
  - lancets
  - blood sugar testing strips

3. Carefully prepare the finger poker following the manufacturer's directions.
4. Poke either side of the fingertip (or toe), not the center or end. Poke in the area between the tip and halfway to the first joint (no closer to the knuckle than the halfway point). You can use any finger, but you should use a different finger every time.



5. If the blood does not flow freely, wait a few seconds after the poke to let the blood vessels relax. The blood should then begin to flow.
6. "Milk" the finger gently from the base towards the tip. Do not squeeze only at the fingertip.
7. Follow the directions for your blood sugar meter to correctly check your blood sugar.
8. Write your blood sugar in your record book.

**Congratulations! You did it!**

# Blood sugar control

## When to check your blood sugar

You should check your blood sugar before each meal and before going to bed (a minimum of four times daily).

For younger children, generally the bedtime blood sugar should be above 100 mg/dl. Otherwise, blood sugars above 80 mg/dl at bedtime is acceptable.

There are certain times when you will need to check the blood sugar more often, such as when the insulin doses are adjusted, when assessing current doses, or before clinic visits. This is called an Assessment Phase, which requires three to five days of extra checks:

- before meals
- three hours after meals, with no carbohydrates eaten in between meals
- before bedtime
- at 3 a.m. for 1-2 nights

It is also important to write down your blood sugars in your daily record book. This will help everyone (you, your family, nurses, doctors) recognize patterns in blood sugars and help decide how much insulin you need. Document blood sugars after each check, or by using the memory button on your meter at the end of each day. If your meter has a logbook function, you should look at this feature at least once a day.

During an Assessment Phase, when you are checking your blood sugars more frequently, it's very important to document the following, so that an appropriate assessment can be made:

- all blood sugars taken
- carbohydrate amounts
- all insulin doses given
- activity levels

In time, families are encouraged to make insulin dose changes on their own, based on the blood sugar patterns you are seeing. Remember, whenever making insulin dose changes, it's important to be checking the blood sugars more frequently. All diabetes center families are asked to attend the Blood Sugar Pattern Management Class in the months following diagnosis. This class discusses in-depth how to recognize patterns and how to make appropriate insulin dose changes on your own.

Blood sugar control is important in long-term diabetes management. Research has shown that improved blood sugar control reduces the risk for complications of diabetes. Blood sugar in people without diabetes is between 60 and 120 mg/dl. Your doctor will determine the right target range for you.

## Target blood sugar ranges

Examples of target ranges by age are listed below. Your range may be individualized by your doctor. Remember that it is impossible to hit the target all the time. Your blood sugar should be in the range about 50% of the time.

- Younger than 6 years: 100–180 mg/dl
- 6–12 years: 80–180 mg/dl
- 12 years or older: 80–150 mg/dl
- Intensified regimens: 70–140 mg/dl

Blood sugar tests look at the level of sugar in the blood at the time of the test. There is a different test, called the Hemoglobin A<sub>1C</sub>, that checks average blood sugar over a three-month period (the life span of a red blood cell). See page 10 for more details.



# All about ketones

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When you do not have enough insulin, sugar builds up in your blood. When this happens, your body tries to use fat for energy because it is unable to use sugar for energy. When your body breaks down fat for energy, ketones are produced.

Ketones build up in your blood and spill into your urine. A high level of ketones in your blood can make you throw up, get very sleepy, or get very sick.

## How to check for urine ketones

Check for ketones when your blood sugars are higher than 300 mg/dl two times in a row OR when you are sick.

1. Take a fresh urine ketone strip from the box or bottle.
2. Urinate on a urine ketone strip or dip the strip into a fresh urine sample.
3. Wait exactly 15 seconds. Time it with the second hand on a watch or clock.
4. Note the color change at exactly 15 seconds. Ignore any color changes after that.
5. The strip will turn shades of pink, purple, or maroon if there are ketones in your urine. Compare the strip to the chart on the box or bottle to find your level of ketones.
6. Record the results in your record book.

Store urine ketone strips in a cool, clean, and dry place. Whenever possible, use the foil-wrapped ketone strips and periodically check the expiration date. Ketone strip bottles should be replaced six months after opening.

There is a blood sugar meter that will measure ketones in the blood. The name of the meter is Precision Xtra<sup>®</sup>. Your provider or diabetes educator may determine that you use this method.

## When to check for ketones

*It is very important to check for ketones when your blood sugars are higher than 300 two times in a row OR when you are sick.*

It is also very important to tell your caregiver if you have a blood sugar higher than 300 or if you have ketones in your urine. This person should call the diabetes educator or doctor if your blood sugar is higher than 300 and you have moderate to large ketones. See the sick-day guideline sheet on page 48 for help adjusting your insulin when ketones are present and blood sugar is high.

When you have ketones, drink as much water or other fluids as you can. If you are drinking fluids with sugar, you may need to give additional insulin shots to keep the blood sugar in control.

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# Quiz on testing blood sugar and ketones

Circle the things that children with diabetes should do to take care of themselves.

Check blood sugar.

Don't tell anyone if you have ketones.

Write down test results.

Test urine for ketones.

Poke the same finger every day.

Don't drink water if you have ketones.

Clean hands with soap and water before doing a blood sugar test.

**Answers:** The following phrases should be circled: check blood sugar, write down test results, and test urine for ketones, clean hands before doing a blood sugar test.

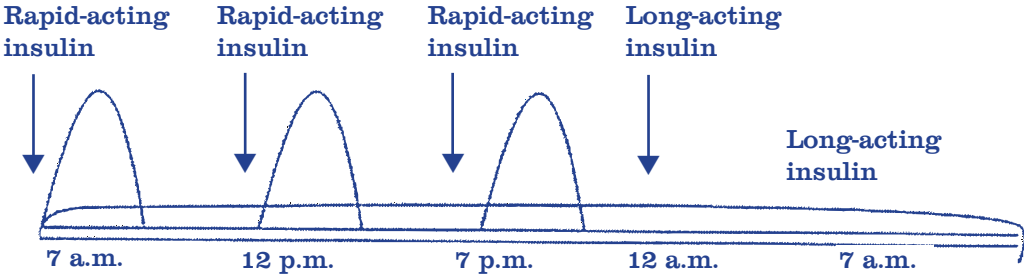
# Insulin schedules and dosing

Insulin is always given as a shot in the fatty areas of the body. There are a number of different forms of insulin and different dosing schedules that can be used to keep your blood sugar in the target range.

Your doctor will help decide which form of insulin and schedule may work best for you. Your insulin type and schedule may change over time to meet your body's needs. For insulin to work in the body it must be given as a shot.

The most common treatment for children who are newly diagnosed with diabetes uses a combination of a long-acting insulin (Lantus or Levemir) and a rapid-acting insulin (Apidra, Humalog, or NovoLog). This treatment is called the Basal/Bolus plan.

Figure 4.1  
**Basal/Bolus Plan**



# How insulin works

There are many different forms of insulin. Below is a list of the most common types of insulin used at the McNeely Pediatric Diabetes Center.

Please remember that the times given on the chart below are averages. Each insulin may work a little differently, depending on the person.

## Definition of terms

**Onset:** When the insulin starts to work.

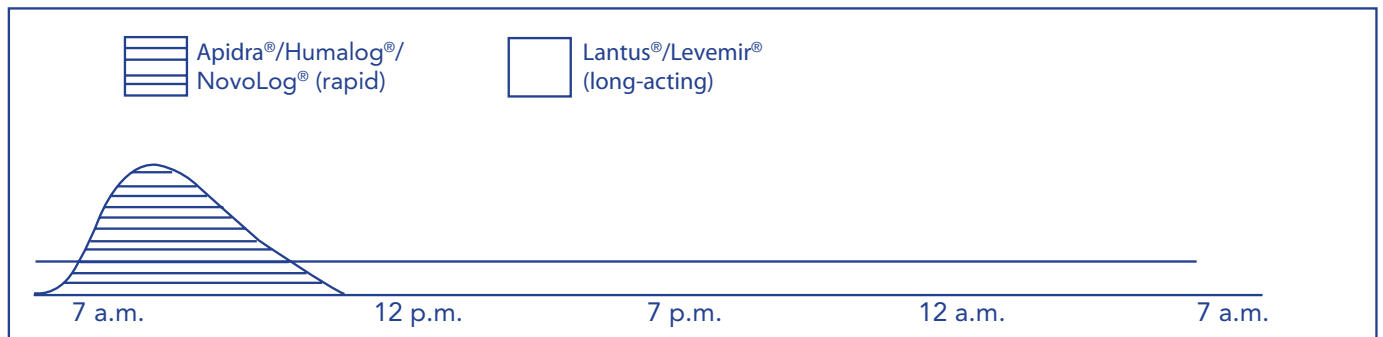
**Peak:** When the insulin is working the hardest.

**Duration:** How long the insulin works.

Type of Insulin	Onset	Peak	Duration
Apidra/Humalog/NovoLog	10-15 minutes	½-1½ hours	3-5 hours
Lantus/Levemir	4-8 hours	None	24 hours

Figure 4.3

## Time Action of Insulin



Other factors that may affect the way insulin works include:

- The dose or amount of insulin given
- The part of the body the shot is given in
- Your level of exercise
- Scar tissue or hard lump at injection site

# Basal/bolus insulin regimen

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## Basal insulin

Description:

- Lantus/Levemir
- Long-acting insulin

Lantus/Levemir is a basal insulin. It is long-acting, essentially has no peak in its action, and is meant to meet the metabolic needs of the body. Basal insulin should help keep blood sugars steady over 24 hours. Lantus/Levemir should be injected at the same time every day.

## Bolus insulin

Description:

- Apidra/Humalog/NovoLog
- Short-acting insulin

**Meal bolus:** Whenever carbohydrates are eaten, the blood sugar will start to rise within 10 minutes. Short-acting insulin is needed at this time to allow the body to use the glucose for energy and to bring blood sugar back down to the target range.

The meal bolus is described as units of insulin per grams of carbs. Meal boluses vary from person to person, and may even vary for different meals and times of the day. The basic guideline is to cover all carbs all of the time with your meal bolus.

The only exception is when treating a low or if you are going to do vigorous exercise.

Remember, it is always best, if at all possible, to give meal boluses before starting to eat. If insulin is injected after eating this can lead to variable glucose levels because the carb and insulin absorption will not match.

**Correction bolus:** A bolus of short-acting insulin is needed to bring the high blood sugar back into target range.

Three hour rule: A correction bolus can only be given if it has been at least three hours since the last short-acting insulin injection (Apidra/Humalog/NovoLog).

When the blood sugar is above target range, you will be given a “corrections scale” to follow to determine how much insulin should be given. An example of a correction scale would be 0.5 unit of short-acting insulin for every 50mg/dl the blood sugar is above 150.

Patient example:

Sarah has Type 1 diabetes. These are her insulin doses:

- Lantus: 8 units at 8 p.m. every night
- Meal bolus: 0.5 unit of novolog per 15 grams of carbohydrate
- Correction bolus: 0.5 unit of novolog per every 50mg/dl the blood sugar is above 150.

This morning when Sarah woke up, her blood sugar was 187. She is going to eat 48 g of carbohydrate before breakfast.

- Meal bolus of 1.5 units for 48 g
- Correction bolus of 0.5 unit for blood sugar of 187.

Her total dose of insulin this morning will be 2 units of NovoLog.

# Storing insulin

Insulin is sensitive to light and temperature. Protect it from direct sunlight, extreme heat, and freezing cold. These extremes will make the insulin less effective.

- Store unopened vials of insulin in the refrigerator (36-46 degrees Fahrenheit).
- Check the expiration date. Do not use any insulin product that is outdated.
- After the cap is removed from the vial, you can keep it at room temperature or refrigerate it. Either way, once it is opened, throw it away after four weeks. Always write the date on the bottles when you open them.
- Keep the insulin bottle in its box so it will stay clean and protected from light.
- Always keep insulin with you.
- Always keep one unopened bottle of each kind of insulin in your home for emergency.
- Check Apidra, Humalog, NovoLog, Lantus, and Levemir insulin for cloudiness or floating particles. Use only if clear and colorless.



## Needle safety

It's important to be safe. Since you are now using syringes and lancets, you have a very important job.

- Your job is to keep yourself, other people, and the environment safe.
- Someone could get stuck by your needle or lancet if you aren't careful.
- Never stick yourself or anyone else with a used needle or lancet. Shared needles or lancets can pass germs.

## Disposal of syringes, needles, and lancets

Discard syringes, needles, and lancets right after using them, in one of these ways:

- Put them in an empty, puncture-proof plastic jug such as a laundry detergent bottle. When the bottle is full, tape or glue the lid closed. The bottle can then be disposed of in your trash.
- Put syringes, needles, and lancets in a "sharps" container. This is a specifically designed container for medical supplies. When it's full, lock it and throw it away.
- Laws for needle disposal can vary from state to state. Please check with your public disposal system for additional information.

# Giving insulin

It is extremely important that you give the right amount of insulin. The wrong amount of insulin can make the blood sugar level go too high or too low.

You can take insulin in your arms, legs, abdomen, buttocks, and hip. You do not have to use all the shot sites or rotate through all the sites. However, insulin should be given in a different spot every day. Using the same shot site all the time will cause hard lumps at the shot site. When this happens, the insulin doesn't work as well.

*Note for Lantus insulin:* Lantus should be given at a different site from other insulin shots. Pinch the skin up to prevent the insulin from going into the muscle. It is recommended that Lantus® be given only in the buttocks or stomach to avoid interacting with other insulin. At Children's we prefer lantus be given in the buttocks.

## Getting ready

Calculate the correct dose of insulin.

1. Wash your hands with soap and water.
2. Gather supplies:
  - alcohol wipes
  - vial of insulin
  - insulin syringe
3. Check the type of insulin and date on the vial to make sure the medicine has not expired.
4. If the vial is cold, warm it by holding it in your hand or letting it stand at room temperature for one hour. This is why it is best to store open insulin at room temperature.

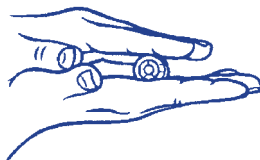
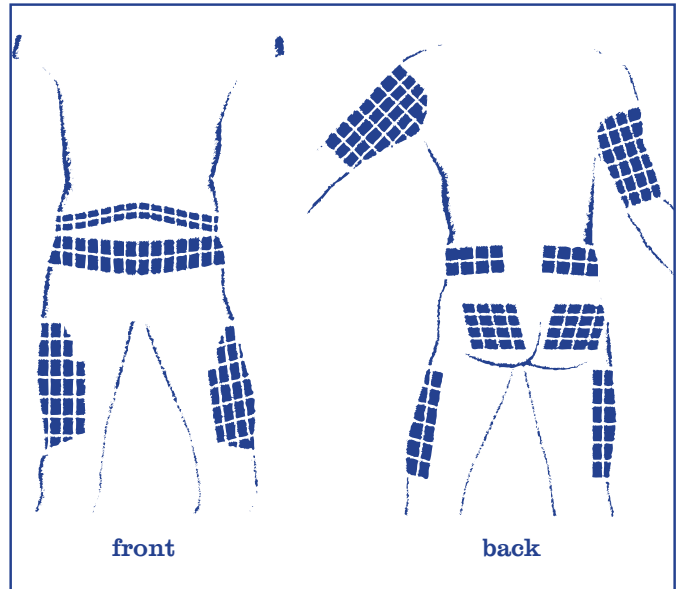


Figure 4.4

## Insulin shot sites



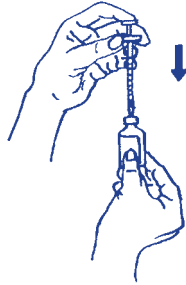
5. If this is the first time the vial is used, snap off the cover. Do not remove the rubber stopper
6. Clean the top of the rubber stopper with an alcohol wipe.
7. Get your syringe and remove the cap covering the bottom plunger.

# Giving insulin shots with syringe

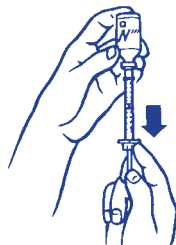
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## Preparing the insulin

1. Pull the syringe plunger to the line that marks the dose you are going to give.
2. Carefully remove the needle cover. Do not touch the needle. Put the needle through the rubber stopper and push the air into the vial.



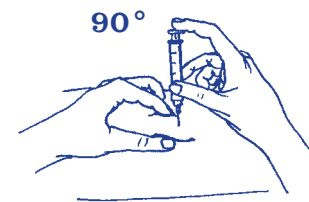
3. Turn the vial upside down. Pull the needle down so only the tip pokes through the rubber stopper. This will allow you to withdraw the medicine without getting air.



4. Check the syringe for air bubbles. The air is harmless, but too large an air bubble will reduce the dose. To remove an air bubble, gently push the solution back into the vial and measure the dose again or tap the syringe to make the bubble go to the top.
5. Remove the needle from the vial. If you must lay the syringe down, replace the needle cover first. Do not allow the needle to touch anything.

## Giving the shot

1. Pick a site to give the shot.
2. Lie or sit down and remove clothing from the injection site.
3. With one hand, pinch up area of clean skin and fat about one inch or so.
4. With the other hand, hold the syringe like a dart.
5. Remove the cap by slipping it between two fingers that are holding the skin, and pull out the syringe.
6. With a quick motion, insert the needle into the skin at a 90-degree angle. Push the plunger slowly until the syringe is empty.



7. Count to five, let go of pinched skin and while keeping needle in the skin count to 5 again before removing needle.
8. Quickly pull the needle out of the skin at the same angle.
9. If bleeding occurs or the insulin leaks out of the skin, put your finger over the injection site. **Do not rub** the injection area, because this may cause the insulin to be absorbed too quickly.
10. Put the syringe and needle into the sharps container.



# Insulin pen shot

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## Preparing the pre-filled insulin

Pre-filled insulin pens come filled with 300 units of insulin. The pen can be used until the insulin is gone or for 28 days, at which time it should be discarded.

1. Verify the **insulin type** in pen is the type needed for the prescribed dose.
2. Remove outer cover from the pen.
3. Twist on a pen needle.
4. Remove the 2 needle covers.
5. Turn dial to 1 to 2 units on pen dose selector.
6. Prime with 1 to 2 units "air shot" to verify pen function and to prime the pen needle. Make sure you can see a drop of insulin at end of the needle.
7. Turn to prescribed dose on pen dial.
8. See "Giving the pen shot."

## Preparing the refillable insulin pen

Refillable insulin pens are refilled with small glass cartridges of insulin. The cartridge is replaced when empty or after 28 days.

1. Verify the **insulin type** in pen is the type needed for the prescribed dose and fits in pen device.
2. Turning counterclockwise, unscrew the top and bottom of pen.
3. Turn top of pen counterclockwise to pull piston into top of pen.
4. Place the insulin cartridge into pen.
5. Screw the top and bottom of pen together.
6. Remove outer cover from the pen.

7. Twist on a pen needle.
8. Remove the 2 needle covers.
9. Turn dial to 1-2 units on pen dose selector.
10. Prime with 1-2 unit "air shot" to verify pen function and to prime the pen needle. *(Note: After replacing the cartridge you may need to prime with several units to ensure that the piston is tight against the cartridge.)*
11. Turn to prescribed dose on pen dial.
12. See "Giving the pen shot."

## Giving the pen shot

1. Pick a site to give the shot.
2. Lie or sit down and remove clothing from the shot site.
3. With one hand, pinch up an area of clean skin and fat about 1 inch or so.
4. With the other hand hold the pen.
5. With a quick motion, insert the pen needle into the skin at a 90-degree angle. Push the top plunger of the pen down completely.
6. Continue to keep pressure on the top of the pen. Count to 10, holding the pinch release pinch and count to 5.
7. Pull the needle out of the skin at the same angle.
8. Replace the large outer needle cover and turn to remove the pen needle. Discard needle in sharps container and replace pen cover.

### Reminder

Pen should be primed with 1-2 units "air shot" before EVERY injection.

# Independence in insulin management

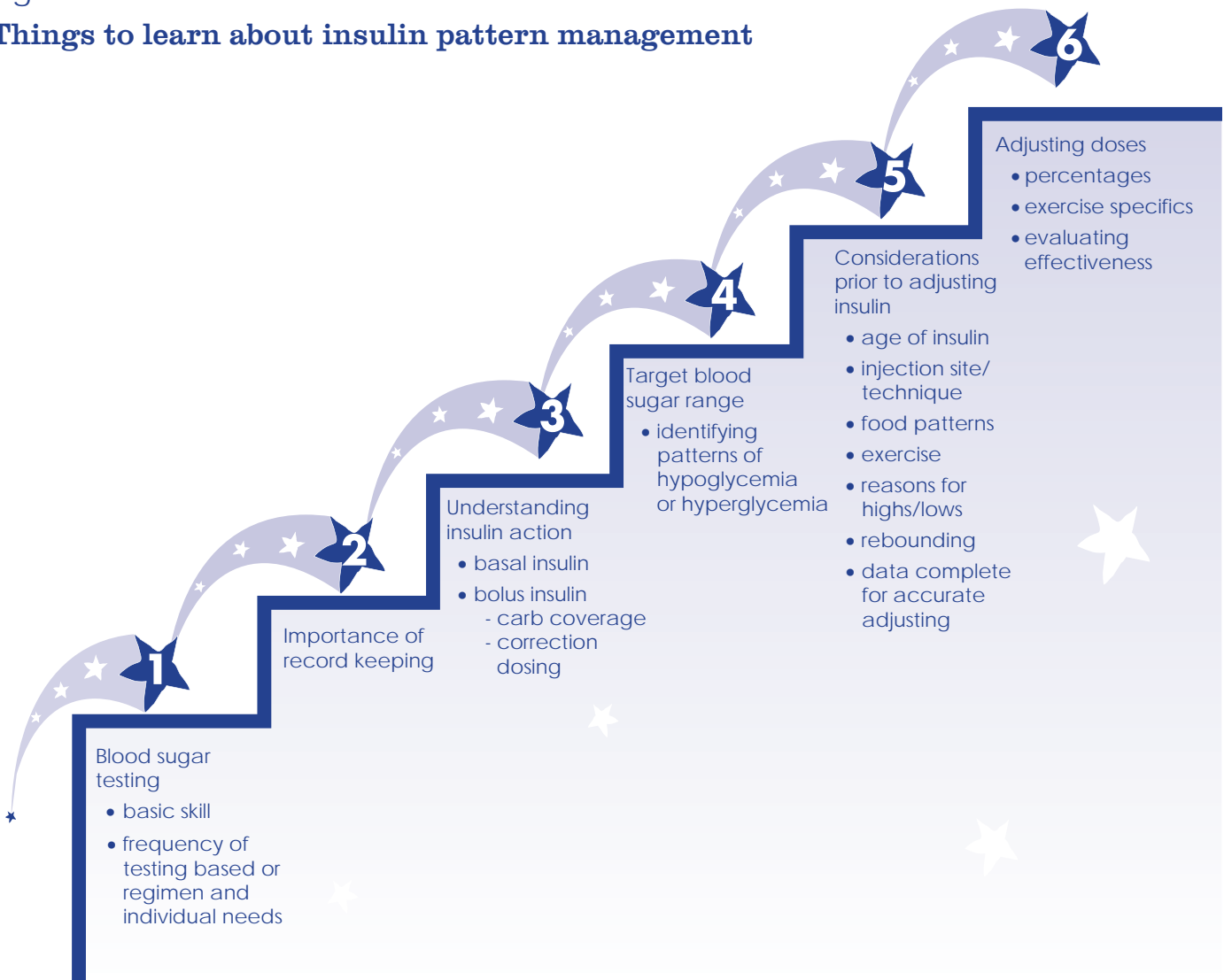
These are the steps that will help you become independent with your diabetes management. These are called “pattern management” and “insulin adjustment.”

It is important to master each step before advancing. The ultimate goal of our diabetes education is to make you an expert in diabetes management.

When discharged from the hospital, most people are on steps 2 to 4. What step are you on?

Figure 4.5

## Things to learn about insulin pattern management



# Independence in insulin management

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## Insulin pattern management:

### Advanced steps

Once you have mastered checking and recording your blood sugars (step 1 and step 2 in figure 4.5, page 23), you are ready to move onto the more advanced steps of pattern management and insulin adjustment.

Below is an outline of the more advanced steps to help you with pattern management and, eventually, independent insulin adjustment.

### Step 3: Understanding insulin action

Once you learn and understand the insulin action of the types of insulin you are taking, you can see which insulin doses affect individual blood sugar readings at different times of the day.

### Step 4: Target blood sugar range

Know your target blood sugar range. This will vary based on your age and insulin treatment.

### Step 5: Considerations prior to adjusting insulin

When you look at your blood sugar patterns, consider all the factors involved. This will help you decide which insulin to adjust. Remember that many factors influence blood sugar levels, not just the insulin dose. When there is no alternative explanation (too much food, old insulin, stress or illness, missed doses) then consider an insulin dose adjustment.

### Step 6: Adjusting doses

Based on the patterns, decide which insulin to adjust. When first learning to make adjustments, it is best to change only one type of insulin and one dose at a time. Generally, you should increase a dose by 10 percent or decrease a dose by 20 percent. If both hypoglycemia (low blood sugar) and hyperglycemia (high blood sugar) are present, make a decrease in the insulin to correct hypoglycemia first. If high blood sugars are still present, then you may increase one of the insulin doses to correct the pattern. If only hyperglycemia is present, wait three to five days between dose adjustments.

*REMEMBER: You still need to test and record blood sugars to monitor the effects of each change in insulin doses.*



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# Insulin quiz

Which word best describe basal insulin?

Rapid-acting      10 minutes onset

“Peakless”      Lantus      24 hours Humalog

**Answers:** Peakless, Lantus, 24 hours

# Nutrition and diabetes

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## The registered dietitian's role

### Initial education

The dietitian will teach you how to count carbohydrates to keep your blood sugar in control.

### Clinic follow-up visits

The dietitian will help you review nutrition topics and concerns as needed for growth, and assist with any special nutrition-related issues such as picky eaters, weight management, or high cholesterol.

### Food types and affects on blood sugar

**Carbohydrates:** All carbohydrates eaten are converted to sugar in the blood.

**Protein:** Unless eaten in very large amounts (more than eight ounces at once), you do not need insulin to cover the protein foods you eat.

**Fat:** Fat does not convert to sugar, but when eaten with carbohydrates it will slow down the absorption of the carbohydrate. This may delay the peak of your blood sugar by one to two hours.

## Intensive insulin to carbohydrate management

**The balance between insulin and food:** Blood sugar testing is an essential part of overall blood sugar control. You will be given a target range for blood sugars before meals. You will be adjusting your rapid-acting insulin dose based on your blood sugar and how many carbohydrates you eat.

When you are on insulins such as Lantus or Levemir (long-acting) with Apidra, Humalog, or NovoLog (rapid-acting), or an insulin pump, you have flexibility with your diet. You can eat different amounts of carbohydrate at meals and snacks while covering them with the appropriate amount of rapid-acting insulin to maintain good blood sugar control.

You will be given a ratio of units of rapid-acting insulin to take per grams of carbohydrate eaten. Your health care provider can help determine the appropriate ratio for you.



# Carbohydrates

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## What are carbohydrates?

Carbohydrates are found in the foods you eat. Starch and sugar are carbohydrates. Starch is in breads, pasta, cereals, potatoes, beans, peas, and corn. Natural sugars are in fruits, and milk. Added sugars are in desserts, candy, jams, and syrups.

In your body, carbohydrates break down into a sugar called glucose. Glucose travels in the blood and supplies your body with energy (or calories). Your body needs insulin to use this energy.

Balancing carbohydrate and insulin helps your blood sugars stay within a healthy range.

Carbohydrate content in food and beverages is measured in grams. **One “carbohydrate choice” has about 15 grams of carbohydrates.**

## Carbohydrate food groups

- Grains, cereals, pasta, and rice
- Breads, crackers, tortillas
- Milk and yogurt
- Fruits and fruit juices
- Dried beans and lentils
- Potatoes, corn, peas, and yams
- Sweets: sugar, honey, syrup, soda, candy, cookies, and baked goods



# Nutrition labels

## Reading a nutrition label

The best way to know the amount of carbohydrates in food you eat is to look at the nutrition facts on the package.

**Serving size:** All of the information on the label is based on serving size. If you eat double the serving size, the nutrients will also double.

**Total carbohydrates:** This is the total grams of carbohydrate found in one serving. It contains all starches, sugars, and dietary fibers. Since fiber does not convert to blood sugar, subtract the total grams of fiber from the total carbohydrate to get the number that will affect blood sugar. The total grams of sugar listed on the label is not necessary information.

**Total fat:** This gives the total grams of fat in a serving of food.

**Saturated fat and trans fat:** This shows the amount of total saturated and trans fat. Both fats can lead to high cholesterol levels. It is best to choose food low in saturated fat and with no trans fat.

## Nutrition Facts

Serving Size 1 cup (1oz)

Servings Per Container 1

### Amount Per Serving

**Calories** 134    **Calories from Fat** 59

	<b>%Daily Value*</b>
<b>Total Fat</b> 6g	<b>9%</b>
Saturated Fat 2g	<b>8%</b>
Trans Fat 2g	<b>8%</b>
<b>Cholesterol</b> 0mg	<b>0%</b>
<b>Sodium</b> 92mg	<b>4%</b>
<b>Total Carbohydrate</b> 17g	<b>6%</b>
Dietary Fiber 1g	<b>5%</b>
Sugars 12g	
<b>Protein</b> 3g	

\*Percent Daily Values are based on a 2,000 calorie diet.



# Carbohydrate choices

A “carbohydrate choice” is a serving of food that has about 15 grams of carbohydrate and varying amounts of protein and fat. Listed below are common foods and the average grams of carbohydrate in a specific amount.

<b>Legumes/starchy vegetables</b>	<b>Amount</b>	<b>Carbohydrate</b>
Beans, baked	1/3 cup	15 g
Beans (garbanzo, kidney, pinto, white)	1/2 cup	15 g
Corn	1/2 cup or 3" cob	15 g
French fries, regular cut	15 fries	15 g
Hummus	1/3 cup	15 g
Lima beans	2/3 cup	15 g
Lentils	1/2 cup	15 g
Miso	3 tablespoons	15 g
Peas (split, black-eyed)	1/2 cup	15 g
Potato, white/sweet, about 4" long	1	30 g
Potato, mashed	1/2 cup	15 g
Squash, acorn or butternut, cooked	1 cup	15 g
Yam	1/2 cup	15 g
<b>Bread/crackers</b>	<b>Amount</b>	<b>Carbohydrate</b>
Bagel, large	1 (4 oz.)	60 g
Bread, wheat or white	1 slice	15 g
Bun, hamburger or hot dog	1	30 g
Cornbread or biscuit, 2" x 2"	1	15 g
Dinner roll	1	15 g
Matzoh	3/4 oz	15 g
Melba Toast	4 slices	15 g
Naan, 8" x 2"	1/4	15 g
Pita, 6" across	1/2	15 g
Tortilla, flour, 8" across	1	22 g
<b>Cereals/grains</b>	<b>Amount</b>	<b>Carbohydrate</b>
Bulgar	1/2 cup	15 g
Chow mein noodles	1/2 cup	15 g
Cornmeal (dry)	3 tablespoons	15 g
Couscous	1/3 cup	15 g
Croutons	1 cup	15 g
Flour (dry)	3 tablespoons	15 g
Granola	1/4 cup	15 g
Grits	1/2 cup	15 g
Kasha	1/2 cup	15 g
Millet	1/3 cup	15 g
Muesli	1/4 cup	15 g
Pasta (macaroni, noodles, spaghetti), cooked	1/3 cup	15 g
Rice, brown or white, cooked	1/3 cup	15 g
Wheat germ	3 tablespoons	15 g
<b>Fruits</b>	<b>Amount</b>	<b>Carbohydrate</b>
Apple, dried	4 rings	15 g
Apple, fresh	1 small	15 g
Applesauce, unsweetened	1/2 cup	15 g



# Carbohydrate choices

Apricot, fresh, whole	5	15 g
Banana, medium	1	30 g
Blackberries	¾ cup	15 g
Blueberries	¾ cup	15 g
Cantaloupe, cubed	1 cup	15 g
Cherries, sweet, fresh	13	15 g
Dates	3	15 g
Figs, dried	13	15 g
Figs, fresh	1½ large or 2 medium	15 g
Fruit, canned, light syrup or juice	½ cup	15 g
Fruit, dried	¼ cup	22-30 g
Grapefruit, large	½	15 g
Grapes, small	18	15 g
Honeydew	1 cup cubed	15 g
Kiwi	1	15 g
Mango, small	½ fruit or ½ cup	15 g
Nectarine, small	1	15 g
Orange	1	15 g
Papaya	½ fruit or 1 cup cubed	15 g
Peach	1	15 g
Pear	1	15 g
Pineapple, fresh	¾ cup	15 g
Plantain	½ cup	15 g
Plums, small	2	15 g
Pomegranate, arils	1 cup	15 g
Plums, dried (prunes)	3	15 g
Raisins or cran-raisins	2 tablespoons	15 g
Raspberries	1 cup	15 g
Strawberries	1¼ cup whole berries	15 g
Tangerines, small	2	15 g
Watermelon	1¼ cup cubed	15 g

## Fruit juice, unsweetened

	Amount	Carbohydrate
Apple juice/cider	½ cup	15 g
Cranberry juice cocktail	⅓ cup	15 g
Grape juice	⅓ cup	15 g
Grapefruit juice	½ cup	15 g
Orange juice	½ cup	15 g
Pineapple juice	½ cup	15 g
Prune juice	⅓ cup	15 g

## Milk/yogurt

	Amount	Carbohydrate
Milk, chocolate	1 cup	30g
Milk, skim, 1%, 2%, or whole	1 cup	15 g
Yogurt, artificially sweetened or plain	1 cup	15 g
Yogurt, sweetened with fruit	1 cup	30-45 g

Carbohydrate content amounts adapted from "My Food Plan Companion," distributed by the International Diabetes Center.

## Other foods and their carbohydrate amounts

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### Breakfast foods

	Amount	Carbohydrate
Doughnut, cake, 3" across	1 doughnut (2 oz)	30 g
Doughnut, yeast or raised, 4" across	1 doughnut (2 oz)	30 g
Honey	1 tablespoon	15 g
Jam or jelly, regular	1 tablespoon	15 g
Muffin, small	1 muffin (2 oz)	30 g
Pancake, 4" across	1 pancake	15 g
Syrup, light	1 tablespoon	8 g
Syrup, regular	1 tablespoon	15 g
Sugar	1 tablespoon	15 g

### Combination foods

	Amount	Carbohydrate
Casserole or hot dish	1 cup	30 g
Chicken nuggets	4-6 nuggets	15 g
Chili	1 cup	30 g
Ketchup	¼ cup	15 g
Lasagna, 3" x 4"	1 piece	30 g
Macaroni and cheese	1 cup	45 g
Pasta salad	1 cup	45 g
Soup (cream, noodle, rice, vegetable)	1 cup	15 g

*Carbohydrate content amounts adapted from "My Food Plan Companion," distributed by the International Diabetes Center.*

## Snacks and sweets

Snacks/sweets	Amount	Carbohydrate
Brownie, unfrosted, or cake, frosted, 2" x 2"	1 piece	30 g
Chips, potato or tortilla, regular	10-15 chips (1 oz)	15 g
Cookie, 3" across	1 cookie	15 g
Cookie, sandwich, small	2 cookies	15 g
Frozen yogurt	½ cup (4 oz)	15-22 g
Ice cream	½ cup	15 g
Popcorn, popped, yellow	3 cups	15 g
Pudding, sugar-free	½ cup	15 g
Soft drink, regular	1 can (12 oz)	45 g

Nuts (serving size 1/2 cup)	Carbohydrate
Almonds, dried	9 g
Brazil nuts	8 g
Cashew nuts, dry roasted	22 g
Hazelnuts (filberts)	10 g
Macadamias	9 g
Peanuts, roasted	12 g
Peanuts, Spanish	12 g
Pecan, dry roasted	7 g
Pine nuts	8 g
Pumpkin seeds	12 g
Sunflower seeds	14 g
Pistachio nuts, dry roasted	17 g
Walnuts, Black dried	6 g
Walnuts, English	8 g

Carbohydrate content amounts adapted from "My Food Plan Companion," distributed by the International Diabetes Center.



# Free foods

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Free foods are foods that contain minimal carbohydrate (less than 5 grams per serving). *Some of these foods have a small amount of carbohydrate, so if you eat more than one serving or eat with other carbohydrate foods they may need to be covered with insulin.*

## Vegetables

Vegetables add important vitamins, minerals, and fiber to your diet. Each serving listed below has under 5 grams of carbohydrate. One serving is ½ cup cooked or 1 cup raw. Three servings at one meal or snack may equal one carbohydrate choice.

Asparagus	Cauliflower	Peppers
Beans, green	Celery	Radishes
Beets, fresh	Cucumbers	Sauerkraut
Broccoli	Greens, all varieties	Spinach
Brussels sprouts	Mushrooms	Tomatoes
Cabbage	Onions	Turnips
Carrots	Pea pods	Zucchini

## Protein

Protein helps your body grow and build strong muscles. These foods have very little or no carbohydrate, but some proteins contain a lot of fat and calories. Bake, broil, roast, or grill meats to avoid extra fat.

Beef	Egg substitute	Pork or ham
Cheese	Fish or seafood	Sausage
Chicken	Lamb	Tuna or salmon, canned in water
Cottage cheese	Lunchmeat	Turkey
Egg	Peanut butter	Tofu

## Fats

Fats provide calories and essential fatty acids to help you grow. Fats have very little or no carbohydrates. Choose the healthier (unsaturated) options when available.

### Unsaturated fats (healthier)

Trans fat free margarine  
Mayonnaise  
Nuts/seeds  
Oils (excluding palm and coconut)  
Natural peanut butter  
Olives  
Avocado

### Saturated or Trans fats (less healthy)

Bacon  
Butter/stick margarine  
Cream cheese  
Gravy  
Shortening  
Sour cream  
Palm, coconut oil  
Lard

## Other foods

Club soda	Jam or jelly, light, 2 teaspoons
Gelatin, sugar-free	Ketchup, 1 tablespoon
Kool-Aid® or flavored drinks, sugar free	Mustard, 2 tablespoons
Seasonings	Pickles, sweet, 2 slices
Soft drinks, diet	Popsicle, sugar-free, 1 stick
Sugar substitutes	Soy sauce or taco sauce, 1 tablespoon
Tea, hot or iced, unsweetened	Syrup, sugar-free, 2 tablespoons
Water, plain or unsweetened)	

Content adapted from "My Food Plan Companion," distributed by the International Diabetes Center.

# Snack ideas

Choose foods from the basic food groups to help meet daily nutrition needs. Consider including one or two items for each snack. Portion sizes for each of these items vary. You should check the label for specific carbohydrate content.

## Fruit

- Apples, grapes, bananas or other fresh fruit
- Raisins or other dried fruit
- Unsweetened applesauce or fruit cups

## Dairy

- Milk
- Pudding
- Smoothies made with fruit and milk or yogurt
- Yogurt

## Grains

- Baked chips with or without bean dip or salsa
- Cereal with milk
- ½ or whole English muffin or bagel
- Granola bar or cereal bar
- Oatmeal
- Popcorn, low fat or air popped
- Pretzels
- Rice cakes, pita bread, or tortillas
- ½ or whole sandwich, add lettuce and tomato
- Whole grain crackers



## Free food snack ideas

These snack ideas will not have a significant effect on your blood sugar. Some of these foods have a small amount of carbohydrate, so if you eat more than one serving or with other carbohydrate foods, they may need to be covered with insulin.

- Beef jerky
- Low-fat lunch meats
- Cottage cheese
- Crystal Light®
- Diet soft drinks
- Hard-boiled eggs
- Hot broth or bouillon
- Hot dog (no bun)
- Omelet with vegetables and cheese
- Peanut butter
- Pickles or olives
- Popsicle®, sugar-free
- String cheese
- Sunflower seeds
- Sugar-free Kool-Aid®
- Sugar-free gelatin
- Tuna fish with mayonnaise
- Turkey sticks
- Vegetables with dip, peanut butter or melted cheese



# Recipe ingredients

The following table gives approximate serving values for ingredients commonly used for cooking and baking.

## Breads/cereals/flours/soups

Bread crumbs	1 cup	78 g
Cake flour, sifted	1 cup	85 g
Cornmeal	1 cup	107 g
Cornstarch	2 Tbsp	15 g
Egg noodles, uncooked	1 cup	31 g
Fettuccini, uncooked	1 cup	26 g
Flour, wheat, all-purpose, sifted	1 cup	95 g
Macaroni, uncooked	1 cup	82 g
Oatmeal, uncooked	1 cup	55 g
Rice, uncooked	¼ cup	38 g
Spaghetti, uncooked	½ cup	17 g
Wild rice, uncooked	¼ cup	23 g

## Dairy products

Milk, condensed, sweetened	½ cup	83 g
Milk, evaporated	½ cup	14 g
Milk, nonfat dry solids,	1 cup	60 g

## Fats and oils

Chocolate, bitter	1 oz	0 g
Chocolate chips	½ cup	89 g
Chocolate, syrup	1 Tbsp	11 g
Cocoa, dry	4 Tbsp	11 g

## Fruits and vegetables

Dates, chopped	½ cup	57 g
Raisins	½ cup	62 g
Tomato catsup or chili sauce	½ cup	32 g
Tomatoes or tomato juice	1½ cup	22 g

## Meats and meat substitutes

Beans and lentils, dry	1 cup	126 g
Beans and lentils, cooked	1 cup	42 g
Peanut butter	1 cup	60 g

## Nuts and miscellaneous

Cashew nuts	1 cup	46 g
Coconut, dried	1 cup	35 g
Pecans, chopped	1 cup	20 g
Walnuts, chopped	1 cup	20 g

## Sugars and syrups

Corn syrup	1 cup	238 g
Honey	1 cup	277 g
Molasses, light	1 cup	220 g
Sugar, brown	1 cup	214 g
Sugar, powdered	1 cup	119 g
Sugar, white	1 cup	200 g

## Nestlé® Toll House Chocolate Chip Cookies

### Ingredients:

	<u>Carb grams</u>
2¼ cup all-purpose flour	213 g
¾ cup granulated sugar	150 g
1 tsp baking soda	0 g
¾ cup packed brown sugar	160 g
1 tsp salt	0 g
1 tsp vanilla extract	0 g
1 cup butter or margarine	0 g
2 eggs	0 g
2 cups (12 oz) Nestlé® Toll House Semi-Sweet Chocolate Morsels	356 g

Makes about 5 dozen (75) cookies.

1. Total grams carbohydrate in recipe = 879 g
2. Divide by total number of servings ÷ 75
3. Total gram carb per cookie = 11.7 g

Carbohydrate content adapted from "Bowes & Church's Food Values of Portions Commonly Used" by Jean A.T. Pennington, PhD, and "The Doctor's Pocket Calorie, Fat and Carbohydrate Counter" by Allan Borushek.

# Sugars and sweeteners

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## What are artificial sweeteners?

They are sugar substitutes or non-nutritive sweeteners that are many times sweeter than sugar.

## What sweeteners are used in the United States?

**Acesulfame-K:** Sweet One<sup>®</sup>, Swiss Sweet, Sunett<sup>®</sup>

**Aspartame:** NutraSweet<sup>®</sup>, Equal, Sweet<sup>®</sup> Mate

**Saccharin:** Sweet'N Low<sup>®</sup>, Sweet 10<sup>®</sup>

**Sucralose:** Splenda<sup>®</sup>

**Stevia:** PureVia<sup>®</sup>, SweetLeaf<sup>®</sup>, Truvia<sup>®</sup>, Stevia Extract in the Raw

## What different food items are sweeteners present in?

Artificial sweeteners are used in diet soda, powdered drink mix, candy, cough drops, chewing gum, breath mints, ice cream, pudding, gelatin, and other food and drinks.

## Does the FDA approve these artificial sweeteners?

Yes, all sweeteners are approved by the U.S. Food and Drug Administration (FDA) for use in food and drink items.

## How do you use low-calorie sweeteners?

Most sweeteners contain little to no carbohydrates. However, foods containing artificial sweeteners are not always carbohydrate free. For example: 4 oz of sugar-free pudding contains almost 15 g carbohydrates because of other carbohydrate-containing ingredients, like milk.

# Low carbohydrate product labels

In response to the current interest in low-carbohydrate diets, the terms “net carbohydrates,” “net affective carbohydrates” and “impact carbohydrates” are appearing on food packaging labels.

The FDA has **not** approved these terms, and they are **not** accurate for use in blood sugar management.

Certain ingredients are absorbed differently and have a minimal affect on blood sugar levels. These ingredients include fiber and sugar alcohols.

## Dietary fiber

Dietary fiber is not completely digested and absorbed and therefore does not affect blood sugar levels. With respect to diabetes and carbohydrate counting, the grams of fiber should be subtracted from the total grams of carbohydrate to determine the grams of carbohydrate that will actually affect blood sugar levels.

## Sugar alcohols

Sugar alcohols, or polyols, are used as sweeteners and bulking agents in foods. Some common names for sugar alcohols include sorbitol, mannitol, xylitol, and maltitol.

**One-half** of the grams of sugar alcohols will affect blood sugar levels and one-half will not. Therefore, when counting carbohydrates, divide the grams of sugar alcohol by two and subtract that number from the total grams of carbohydrate.

The FDA has not determined an acceptable daily intake for sugar alcohols. When consumed in excess amounts, they may have a laxative effect.

## Low carbohydrate label calculation

Nutrition Facts	
Serving Size 1 bar	
Servings Per Container 1	
Amount Per Serving	
<b>Calories</b> 217	Calories from Fat 81
<b>Total Fat</b> 9g	
Saturated-Fat 6g	
Trans Fat 2g	
<b>Cholesterol</b> 10mg	
<b>Sodium</b> 230mg	
<b>Total Carbohydrate</b> 30g	
Dietary Fiber 5g	
Sugars 3g	
Sugar Alcohols 22g	
<b>Protein</b> 4g	

To calculate grams of carbohydrate that will affect your blood sugar, subtract fiber from the total carbohydrate grams.

**Dietary fiber = 5 g**

30 grams total carbohydrate - 5 g fiber =  
25 g carbohydrate affects blood sugar

If there are sugar alcohols in a food, divide the total amount of sugar alcohols by 2 and then subtract from the total grams of carbohydrates that affect blood sugar.

**Sugar alcohols = 22 g**

22 g ÷ 2 = 11 g

25 g - 11 g = 14 g

Total carbohydrates that affect blood sugar = 14 g



# Food adjustments for exercise

The following guidelines are helpful if you are involved in sports or exercise. These guidelines vary with individuals and cannot guarantee that your blood sugar will not go too low or high. Monitoring blood sugar before, during, and after exercise will give a good idea of how a particular type and duration of exercise affects blood sugar.

## What can exercise do for you?

- Help you feel better about yourself.
- Help you cope with stress.
- Give you more energy throughout the day.
- Help you maintain a healthy weight.
- Lower blood sugar, blood cholesterol, and blood pressure.
- Help your body use insulin better.

It is recommended that you get some form of exercise for 60 minutes, at least five times a week.

It is important to test your blood sugar before, during, and after you exercise. If ketones are present, you should take a break from exercising.

Exercise may lower blood sugar in some children. To avoid going too low, a carb snack may need to be added before or during the activity.

A suggested food replacement guideline for exercise is 15 g of carbohydrate for every 30 to 60 minutes of moderate intensity activity.

## 15 gram carbohydrate snack ideas:

- 3 graham cracker squares
- 4 ounce juice
- 1 small piece fresh fruit
- 2 tablespoons raisins
- 1 eight ounce cup of milk

*You should always have a source of carbohydrate available when exercising.*

Types of exercise	Examples of exercise	If blood sugar is	Increase food intake by
Exercise of short duration (less than one hour) and low to moderate intensity	Walking, bowling (1 hour)	Less than 80 mg/dl	15 g of carbohydrate per hour of exercise
		Greater than 80 mg/dl	No food necessary
Exercise of moderate intensity	Swimming, jogging, golfing, bicycling, tennis, dancing (1 hour)	Less than 80 mg/dl	25 to 50 g of carbohydrate before exercise; then 10 to 15 g per hour of exercise
		80 to 170 mg/dl	15 g of carbohydrate per hour of exercise
		180 to 300 mg/dl	No food addition
		Greater than 300 mg/dl	Check for ketones. Don't exercise if ketones are present.
Exercise of vigorous intensity	Football, hockey, basketball, soccer, strenuous bicycling, swimming, heavy snow shoveling, cross-country skiing (1 hour)	Less than 80 mg/dl	50 g of carbohydrate. May need more if exercising more than one hour.
		80 to 170 mg/dl	25-50 g of carbohydrate
		180 to 300 mg/dl	15 g of carbohydrate
		Greater than 300 mg/dl	Check for ketones. Don't exercise if ketones are present.

# Tips for healthy eating

It is important to eat healthy, well-balanced meals to give your body the energy and nutrition it needs to grow and be strong.

## My Plate

Use MyPlate as a healthy meal-planning model. Include foods from each group at meals to make sure your body is getting what it needs.

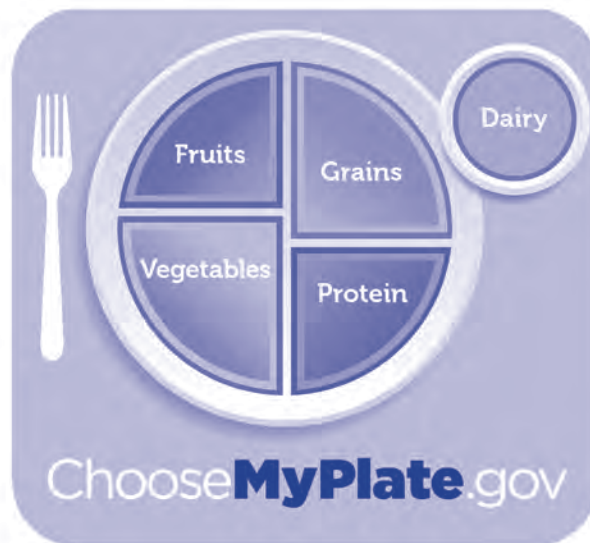
Here are some additional tips:

- Make half of your plate fruits and vegetables. Choose a variety of colors.
- Choose lean protein foods, such as skinless lean meats, egg whites, low-fat cheese, or tofu.
- Choose whole grains. Look for the words “100% whole grain” or “100% whole wheat” on the food label.
- Include a cup of skim or 1% milk. Don’t drink milk? Try low-fat soy milk or include low-fat yogurt at your meal. You can ask your dietitian for other ways to ensure adequate calcium and vitamin D intake.

## Healthy lifestyle habits

Eat 3 balanced meals and 1-2 snacks daily. Infants and toddlers will need to eat more often.

- Take your time. Eat slowly and enjoy the flavors, colors, and textures of your food.
- Choose whole food like fresh or frozen fruits and vegetables, grains, and fresh meats. Limit more processed foods which are often higher in fat, salt, and sugar.
- Practice portion control. Use MyPlate as a guide for portion size. When eating out, share a dish or take home part of your meal.
- Limit “empty” calories like candy and sweet beverages (such as soda and fruit juice).
- Get moving! Reduce screen time to less than once a week. Choose small options, not super-sized.
- Try new foods. Pick out new foods you’ve never tried before. You may find a new favorite!



# Diabetes and alcohol

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## Diabetes and alcohol

People with diabetes may drink alcohol. You should understand how it may affect your blood sugar and overall diabetes control. It is important to always drink in moderation and only if you are of legal drinking age.

The liver has to process alcohol and while it is doing that, it is unable to produce glucose. Therefore, the only sugar going into your blood will be from food.

Unless you make sure that you take carbohydrates while and after you drink alcohol, you could experience hypoglycemia. This sugar-lowering effect can last as long as 8 to 12 hours after your last alcoholic beverage.

Since the symptoms of intoxication can be similar to low blood sugar and others may not recognize the difference, be prepared:

- Wear a medical ID that says you have diabetes.
- Carry a source of carbohydrate with you.
- Monitor blood sugar every few hours, especially if you are going to be active.
- Read labels and keep track of intake. One serving equals 12 ounces of beer, 3 to 4 ounces of wine, or 1 to 1.5 ounces (one shot) of liquor.

## Remember:

- It is very important to eat carbohydrates when you have been drinking.
- Take 10 to 15 grams of carbohydrate for each serving of alcohol.
- In case you have overindulged and lost track of intake, be sure to have at least 45 to 60 grams of carbohydrate at bedtime no matter how high your blood sugar is.

# Resources for carb counting and healthy weight management

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To determine amount of carbohydrate in foods.



Below are references felt to be reliable that may serve as useful tools. Please note that we cannot guarantee 100% accuracy of all the information provided by these organizations and applications.

## Websites

[www.calorieking.com](http://www.calorieking.com)

<http://ndb.nal.usda.gov/> (USDA Nutrient Database)

[www.diabetes.org/](http://www.diabetes.org/) (American Diabetes Association or ADA)

[www.diabetes.org/living-with-diabetes/parents-and-kids/planet-d/](http://www.diabetes.org/living-with-diabetes/parents-and-kids/planet-d/) (ADA for kids)

[www.Kidshealth.org/kid/health\\_problems/gland/treating\\_type1.html](http://www.Kidshealth.org/kid/health_problems/gland/treating_type1.html) (Kid's Health)

[www.eatright.org](http://www.eatright.org) (Academy of Nutrition and Dietetics)

[www.loseit.com](http://www.loseit.com) (Assess your food intake and physical activity)

[www.MyFoodDiary.com](http://www.MyFoodDiary.com)

## Smart Phone Apps

- Carb Counting with Lenny (great for elementary age children)
- GoMeals (powered by Calorie King)
- Track3
- Diabetes Companion
- GluCoMo
- Glucose Buddy
- WaveSense Diabetes Manager
- Restaurant Nutrition
- My Fitness Pal – Calorie Counter and Diet Tracker
- Lose It!

## Other Resources

The Calorie King – Calorie, Fat, and Carbohydrate Counter (book)

# Hypoglycemia

Hypoglycemia is defined as **abnormally** low blood sugar. In order to function, the body must have sugar to produce energy. Blood sugar is the main source of fuel for the brain. If your blood sugar stays low for too long, your brain can be harmed.

Hypoglycemia may come on quickly and must be treated. Early treatment prevents severe reactions and possible hospitalization.

True hypoglycemia is defined as a blood sugar level less than 60 mg/dl. The Diabetes Center builds in a buffer of 10-20 mg/dl to protect you from the risks of hypoglycemia.

### Treatment guidelines

For children under age 3, treat if blood sugar is less than 100 mg/dl, for children ages 3-4, treat if blood sugar is less than 90 mg/dl. For children ages 5 and older, treat if blood sugar is less than 80 mg/dl. For intensive regimen, treat if blood sugar is less than 70 mg/dl.

Hypoglycemia can be caused by:

- too little food.
- too much insulin.
- exercise.
- waiting too long to eat a meal after taking insulin.
- giving a shot into a muscle.

### Warning signs of hypoglycemia

Mild/Moderate		Severe
shakiness	sweating	irrational behavior
hunger	dizziness	
paleness	weakness	slurred speech
irritability	stomachache	seizures
behavior changes		coma

### How to care for a child with hypoglycemia

Follow the rule of 15: Test, treat with 15 grams, retest in 15 minutes.

1. When possible, test the blood sugar level (if unable to test and you think the child's blood sugar level is low, treat and test blood sugar level when able).
2. If the blood sugar level is low (see treatment guidelines), treat with a quickly absorbed carbohydrate as soon as possible. If your blood sugar is below 10 points or less before your low blood sugar guidelines, consider treating with 8 grams of carbohydrate. If your blood sugar is greater than 10 points less than low blood sugar guidelines, treat with 15 grams of carbohydrate. If your blood sugar level is less than 50, consider taking 30 grams of carbohydrates. All examples below equal 15 grams of carbohydrates:
  - ½ cup fruit juice
  - 3 to 4 glucose tablets
  - ½ cup regular soda
  - 1 cup skim milk

While quickly absorbed carbohydrates work best, any carbohydrate-containing food will work. When in doubt, treat with 15 grams of carbohydrate.

3. Retest blood sugar after 15-20 minutes to make sure it has returned to normal. (Remember that it takes 10-20 minutes for the blood sugar to rise; we recommend waiting until the value is back up before returning to normal activity.)
4. If blood sugar is still low, retreat according to the treatment guidelines above. Continue with the treating and retesting cycle until blood sugar returns to normal.
5. If hypoglycemia occurs more than two times per week, insulin adjustments may need to be made.
6. Please contact the clinic if you are experiencing low blood sugar more than 2 times per week.

# Treating hypoglycemia

## Severe hypoglycemia

If your child becomes unconscious, is unable to swallow, or has a seizure:

1. Give glucagon (see glucagon dosing sheet on page 46).
2. Call 911.

## Preventing hypoglycemia

It is important to try to prevent the onset of hypoglycemia. If you have frequent hypoglycemia or a gradual fall in blood sugars, you may not develop the early symptoms of hypoglycemia.

To help prevent hypoglycemia:

- Eat meals and snacks on time.
- Pay attention to early warning signs to avoid further symptoms.
- Eat extra carbohydrate for heavy exercise or extended activity.
- Perform extra blood sugar checks before, during, and after activity.
- Carefully count carbohydrates, calculate dose and accurately draw insulin dose.
- Make sure blood sugar is at adequate level at bedtime.
- Consider overnight glucose checks if very active, have multiple lows or sick.

## Rebound

If you have variable morning blood sugars (very low to very high), restless sleep, or morning headache, you may have low overnight with rebound (high) morning blood sugars. If you suspect this, it is important to check blood sugar level at night for several nights.

## Other things to know

- Everyone with diabetes should wear a medical ID in the form of a bracelet or necklace to alert others you have diabetes.
- For teens who are driving: Always test blood sugar before driving and keep glucose tablets in your car. It is Minnesota law that you need to contact the Minnesota Department of Public Safety when you are first diagnosed with diabetes to notify them that you are insulin-dependent.
- Inform teachers, coaches, childcare providers, employers, relatives, and friends how to recognize the signs of hypoglycemia and how to treat it.
- To minimize rebounds, avoid over-treating.
- All carbohydrates used to treat hypoglycemia are given in addition to regular meals and snacks. NO insulin should be given for these carbohydrates.
- It is important to keep records of blood sugar levels, hypoglycemia, and treatment.
- A parent's greatest fear is that hypoglycemia may occur during the night. The incidence of this has decreased significantly due to the use of new "peakless" insulins and pump therapy.

We recommend checking blood sugar once a month during the night, especially with changes in activity or insulin doses. Your doctor may also recommend a higher target blood sugar level at bedtime.

# Glucagon

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Glucagon is a medication that raises the blood sugar. It does this by releasing an emergency supply of glucose from the liver into the blood stream. Do not hesitate to give glucagon, because it is a safe drug. There is no danger of overdose. If you are ever in doubt as to whether to give glucagon, go ahead and give it.

## When to give glucagon

Glucagon is to be administered for severe hypoglycemia. Severe hypoglycemia is not a number but a symptom. It is dangerous to feed someone who is unconscious. Therefore, if the person is unconscious, unable to cooperate, or having a seizure from a low blood sugar, glucagon should be given. Glucagon also should be given if the person who has a low blood sugar is unable to take carbohydrates by mouth due to vomiting (see mini-dose glucagon guidelines on page 50). Glucagon should be avoided if the child is awake, alert and can eat or drink fast-acting carbohydrates.

## How to give glucagon

Glucagon is given by injection into the muscle.

- Remove the flip-off cap from the bottle of glucagon.
- Remove the needle protector from the syringe, and inject the entire amount of diluting fluid into the bottle of glucagon.
- Remove the syringe from the bottle and shake gently until the solution is clear.
- Use the following dose guidelines:
  - Younger than 6 years old: give 0.3 ml (30 units on an insulin syringe).
  - 6 to 18 years: give 0.5 ml (use glucagon syringe to 0.5 mark).
  - Older than 18 years: give 1 ml (use glucagon syringe and give full amount).

- Inject glucagon into the muscle in the thigh, buttock, or arm. It also may be given subcutaneously like an insulin injection.
- Place child on his or her side.
- Call 911 for assistance after you give the glucagon.
- Your child should begin to awaken or become alert within 15 to 20 minutes.
- When your child becomes alert enough to swallow, offer small amounts of juice or regular pop. Follow this with additional foods, such as crackers or bread, to prevent the blood sugar from dropping again.
- Glucagon, combined with hypoglycemia, can cause headaches, nausea, and vomiting. Your child may need to rest for the first 12 hours following the hypoglycemia. Monitor your child's blood sugars at least every four hours.

## What to do after

Your doctor should be notified whenever a severe hypoglycemic reaction requiring glucagon occurs. Glucagon is available by prescription only. When your home supply of glucagon has been used, it is important to get a prescription and fill it as soon as possible so you always have a supply at home.

## Storage

Glucagon should be stored at room temperature. Once a year, check the expiration date on the glucagon to make sure it hasn't expired. It is good until the expiration date, unless it has been mixed. Once mixed, it is good for only 24 hours at room temperature or 48 hours in the refrigerator.

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**Circle T for true or F for false.**

1. T or F      A blood sugar reading of 120 should be treated with fast-acting carbohydrate.
2. T or F      Four ounces of orange juice is a good choice for treating a low blood sugar.
3. T or F      Feeling shaky and hungry is a sign of severe hypoglycemia.
4. T or F      You should test your blood sugar 15 minutes after treating a low blood sugar.

**Answers:** 1. False, 2. True, 3. False, 4. True



# Sick-day guidelines

Children with diabetes can get sick just like any other child. With illness, there is a release of hormones that can cause blood sugar and insulin needs to increase. There are certain precautions that should be taken during illness.

## Sick-day guidelines

1. Check blood sugar more frequently (at least every three to four hours).
2. Check urine ketones two times each day when your child is sick, even if blood sugar is normal. If your child is vomiting or has ketones in the urine, test ketones each time your child urinates (see page 14 to review ketones).
3. Encourage your child to take in fluids to avoid dehydration. If your child is vomiting or unable to eat solid foods, offer frequent sips of carbohydrate containing fluids. Try to eat or drink 15 grams of carbohydrate per hour. See sick day exchange sheet on page 51.
4. **Never** skip an insulin dose entirely, even if your child sick, vomiting, or both. The body needs insulin to convert sugar into energy so that it can fight infection. If your child is vomiting, or unable to eat, see the insulin adjustment guidelines on page 49.
5. Over-the-counter medications are appropriate for treatment of short-term illness, such as cold or fever. They do not usually have a significant affect on blood sugar levels if taken in prescribed amounts.
6. Keep a written record of blood sugars, ketone levels, carbohydrates intake, and insulin doses.

## Flu shots

The Diabetes Center recommends the flu vaccine each fall for children who have diabetes. Children who have diabetes are not necessarily more at risk of getting the flu, but if they were to get the flu, recovery can be much more difficult.

## When to call the Diabetes Center

- Vomiting for more than six hours, or more than four hours for children younger than 5 years old
- Vomiting clear liquids three or more times
- Vomiting and have ketones
- Vomit looks like coffee grounds
- Child has moderate or large ketones and you have given two or more extra injections of fast-acting insulin
- Child has moderate or large ketones and the blood sugar is less than 250 mg/dl
- Glucagon was given
- Child refuses to drink or is unable to progress to solid foods in 24 hours
- Child has a constant, severe stomachache
- Child shows signs of mild or moderate dehydration, such as no urine for eight hours, dry lips, or no tears when crying
- Child's eyes seem sunken
- Child has little energy (listless)
- Child loses weight

When calling the Diabetes Center for help with sick-day management, please have the following information available:

- Your child's current blood sugar levels
- Your child's urine ketone result
- The last insulin dose (when it was given and how much was given)
- The last carbohydrate eaten and fluid intake
- The last time your child vomited

# Guidelines for treatment – Basal insulin

These are insulin adjustment guidelines for vomiting when your child is using a Lantus/Levemir insulin plan, along with Humalog/Novolog/Apidra insulin.

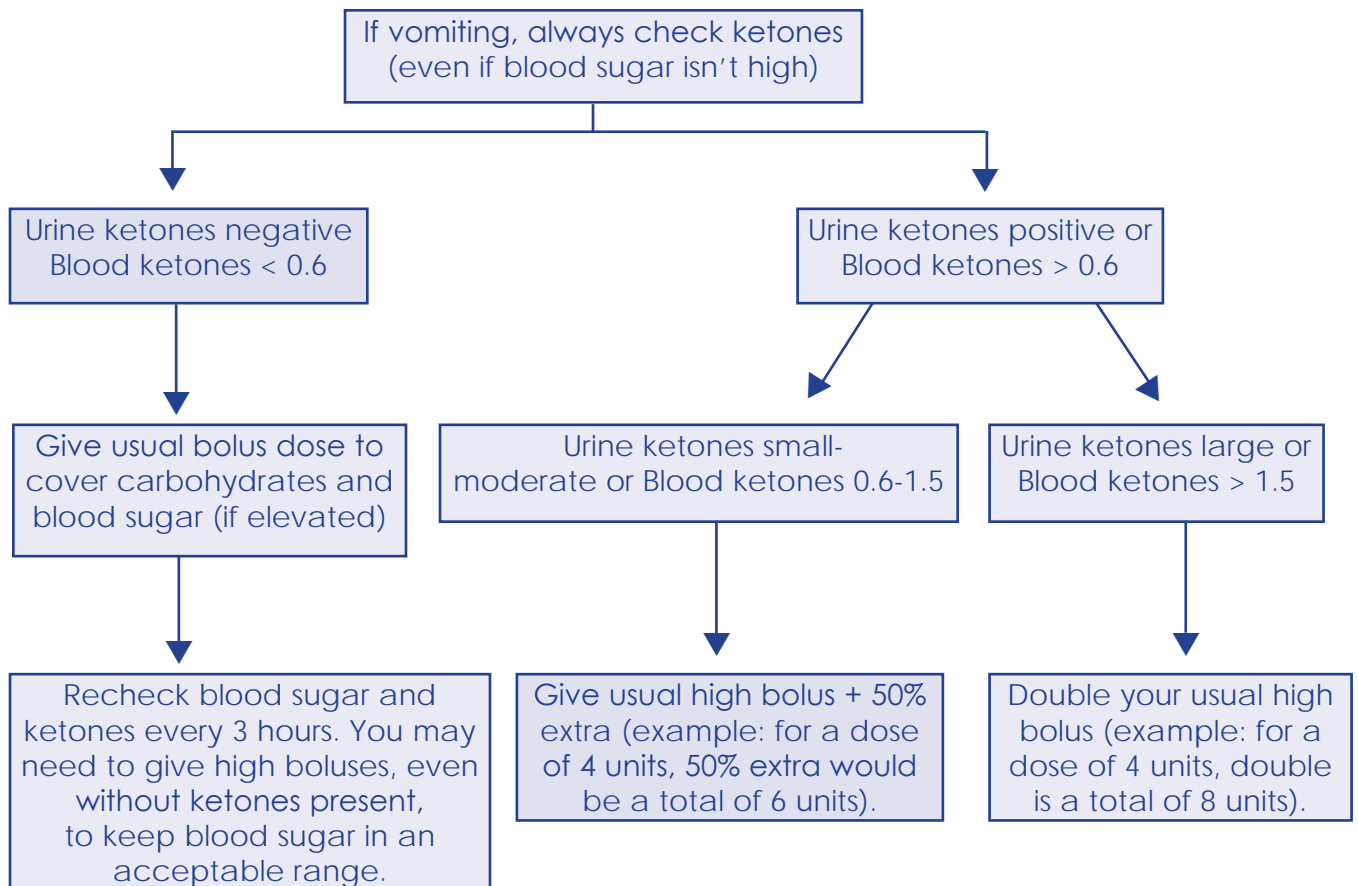
## What to do

- Give the usual Lantus/Levemir dose as scheduled.
- Check ketones and blood sugar every three hours.
- Cover any carbohydrates you are able to keep down with your usual meal bolus (correction dose). May give insulin to cover carbs 30 minutes after ingestion if vomiting to ensure fluids stay down.
- Give rapid-acting insulin according to chart below, based on ketones and blood sugar. (This is considered a correction dose.)

- Offer sips of fluids containing carbohydrates every 10 to 15 minutes, starting 30 minutes after the last episode of vomiting.
- High boluses (correction doses) may be given every three hours.

## Call the clinic if

- Ketones do not start to decrease after two boluses (corrections).
- Your child's blood sugar is low and you are having difficulty bringing it up.
- You feel your child's condition is getting worse.



# Vomiting guidelines

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Vomiting (throwing up) is a symptom that is present in many illnesses. Vomiting may be serious if it leads to dehydration (getting “dried out”). The younger the child, the more quickly dehydration can happen.

Vomiting may be caused by a viral infection, food that “disagrees” with the stomach, or a blockage. Often, diarrhea occurs 8 to 12 hours after vomiting (that is caused by a virus) begins. Vomiting usually stops in 6 to 24 hours.

## How to care for your child

### Step 1: Give only clear liquids (no solid foods or medicines by mouth).

1. Do not give anything by mouth until your child stops vomiting.
2. After your child has not vomited for 45 to 60 minutes, give one tablespoon of clear liquids (not plain water, but diluted juice, clear soda, or sports drink) every 10 minutes for one hour.
3. If your child can keep these small amounts down, double the amount every hour. Continue this for eight hours. If your child vomits, rest the stomach for 45 to 60 minutes and start over with one tablespoon.

Additional note: When children are vomiting, starvation ketones can develop. This is due to not getting enough carbohydrate, the body will then breakdown fat for energy making ketones. If your child is vomiting, it is important to sip on carb containing fluids (regular clear soda, juice, sports drink). Only give carb coverage for these fluids after they have kept them down for 30 minutes.

Note: A common mistake is to drink as much clear liquid as you want rather than slowly increasing the amount. This usually leads to more vomiting.

### Step 2: Add bland foods.

After eight hours without vomiting, your child can slowly return to a normal diet. Usually your child can be back on a normal diet within 24 hours after vomiting stops.

Soda crackers, bland soups like chicken noodle, rice, mashed potatoes, applesauce, and bananas are good choices for bland foods.

## Exchange list

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When you are sick, you may need to eat foods that digest more easily than your usual solid foods diet. If you are vomiting, please see the vomiting guidelines on page 48 for starting liquids. If you are not vomiting but do not feel well, it is still important to eat. Use the following chart to calculate the amount of carbohydrate for replacement.

*Remember:*

When using high-carbohydrate beverages, such as soda or juice, please spread out the carbohydrates using 15 grams per hour.

<b>Food</b>	<b>Amount</b>	<b>Carbohydrate</b>
Bread or toast	1 slice	15 g
Cream of Wheat	½ cup	15 g
JELL-O®, regular	⅓ cup	15 g
Popsicle®	1 bar (½ twin pop)	15 g
Saltines	6 crackers	15 g
Graham crackers	3 squares	15 g
Chicken noodle soup	1½ cups	14 g
Chicken rice soup	1½ cups	14 g

<b>Beverages</b>	<b>Amount</b>	<b>Carbohydrate</b>
Milk	1 cup	12 g
Apple juice	½ cup	15 g
Grape juice	⅓ cup	15 g
Cranberry Juice cocktail	⅓ cup	15 g
Orange juice	½ cup	15 g
Hawaiian Punch®	½ cup	15 g
Kool-Aid® from mix	½ cup	12 g
Soda	½ cup	12 g
Gatorade®	1 cup	14 g
Pedialyte®	2 cups	12 g

# Mini-dose glucagon

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In addition to its use in severe hypoglycemic reactions, glucagon can be used during times of decreased appetite from the flu, mild hypoglycemia (low blood sugar), or decreased appetite due to behavior problems in young children.

**When giving mini-dose glucagon for the first time, please call the Diabetes Center or doctor on-call.**

## When to give mini-dose glucagon

Mini-dose glucagon should be given when you have moderate hypoglycemia with symptoms (less than 100 for children under 3, less than 90 for children ages 3-4, and less than 80 for children 5 and older) and are unable or unwilling to eat because of nausea, vomiting, or stomach upset. It also may be given to children who are exhibiting oppositional behavior, such as refusing to eat and have low blood sugar.

## How to give mini-dose glucagon

- Remove the flip-off cap from the bottle of glucagon.
- Remove the needle protector from the syringe, and inject the entire amount of diluting fluid into the bottle of glucagon.
- Remove the syringe from the bottle and shake gently until the solution is clear.
- Draw up the glucagon from the vial with an insulin syringe; the number of units equals a child's age in years up until he or she turns 15, at which time everyone should take 15 units. For example:
  - Less than 3 years old, give a dose of two units.
  - 4 years old, give a dose of 4 units.
  - 8 years old, give a dose of 8 units.
  - 15 years and older, give a maximum dose of 15 units for everyone

- Inject the glucagon subcutaneously, the same way insulin is injected.
- Recheck the blood sugar in 30 minutes. If it is not improved (blood sugar remains low), repeat glucagon at twice the previous dose.

For example: A 4-year-old child has a blood sugar of 74 mg/dl, is crying, and will not eat or drink. Give 4 units of glucagon and repeat the blood sugar check in 30 minutes. If the blood sugar reading is still <90, give 8 units of glucagon (4 units x 2).

- Monitor the blood sugar hourly.
- If you are concerned about dehydration or if there is ongoing vomiting, diarrhea, or both, please call the Diabetes Center or the doctor on call.
- Keep 50 units (500 mcg) in reserve for treating severe hypoglycemia if it occurs within the same 24-hour period.

## Storage

Unused glucagon should be stored at room temperature. Once a year, check the glucagon expiration date to make sure it hasn't expired. It is good until the expiration date, unless it has been mixed. Once mixed, it is good for only **24 hours** at room temperature or **48 hours** in the refrigerator.

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## Sick-day quiz

Circle T for true or F for false.

1. T or F      Never completely skip your child's insulin when they are ill.
2. T or F      If your child is vomiting or if there are ketones in the urine, test your child's blood sugar at least every two hours.
3. T or F      For small ketones you should double the correction scale dose.
4. T or F      Do not give very fast-acting insulin more often than every two to three hours.
5. T or F      If your child is vomiting, replacement fluids should contain carbohydrates.

Answers: 1. True, 2. True, 3. True, 4. False, 5. True

# Exercise

## Having fun with exercise

An active lifestyle is important for everyone. These are some of the added benefits for people with diabetes.

Exercise:

- helps control diabetes.
- decreases insulin requirements.
- provides social interaction with other children.
- reduces body fat.
- makes your heart healthy.
- builds confidence.
- reduces stress.

Think of exercise—taking a walk, building a snowman, riding a bike, flying a kite, getting involved in a team sport—as using energy.

Make sure that you have an extra snack packed for days when you have gym at school. Talk with the school personnel to alert them that you probably need a snack before gym class.

For that unplanned or unusual activity, you should carry an extra source of carbohydrate such as glucose tablets, a four-ounce juice box, or small granola bar to use if a low blood sugar occurs.

Exercising with a friend acts as a safety net if you would have a low blood sugar and would need some help.

A suggested food replacement guideline for exercise is 15 grams of carbohydrate (one choice) for every 30 to 60 minutes of vigorous exercise.

This is just a starting guideline for food replacement. Based on each person's body and activity level carbs may need to be adjusted in smaller or larger amounts. The best way to figure out what works best for you and your different activities is by testing before, during and after exercise.

## Insulin adjustments for exercise

For scheduled or planned exercise, you may wish to adjust your insulin dose rather than eat extra carbohydrates. This is especially true if you are concerned about weight management. See page 42 in the Nutrition section for information on food adjustments for exercise.

If you are using long-acting (Lantus or Levemir) insulin, one option would be to reduce your rapid-acting (Apidra, Humalog, or NovaLog) insulin for the meal you eat before you exercise. For example, if you normally take one unit rapid-acting insulin per 15 grams carbohydrate and are eating 60 grams carbohydrate prior to vigorous exercise, you would take insulin for only 45 grams, thereby reducing your mealtime insulin dose.

If this is the first time you are adjusting insulin for exercise or planning an activity day such as all-day skiing or hiking, you may want to discuss the adjustment with your diabetes provider or a nurse educator before you make a change.

Planned exercise time	Insulin to be reduced
Mid-morning	Breakfast rapid-acting
Lunchtime	Breakfast or lunch rapid-acting
Mid-afternoon	Lunch rapid-acting
Suppertime	Suppertime rapid-acting
Evening	Suppertime rapid-acting (may also need to reduce bedtime long-acting)

# Returning to school

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Going back to school after being in the hospital is an important step in returning to regular lifestyle activities.

## **Communication and planning:**

### **What parents should do**

Open communication is key to a successful transition. Not all students with diabetes are managed the same way, so clear and open communication between the school personnel and families is important in developing a plan to best meet your child's diabetes care needs at school.

The best person to work with is the school or district nurse. The school nurse can coordinate the information that will be needed by the school staff to assure a safe and supportive school environment. As soon as possible after a new diagnosis and each fall before the start of the school year, contact the school nurse to arrange for your child's health care needs. It is important to not leave it up to the child or adolescent to inform and educate the school; they may be self-conscious or embarrassed to discuss his needs fully. Not all schools will have a nurse on site. Contact your school for information on who will be assisting with diabetes care.

### **The school communication and treatment authorization form**

The School Communication and Treatment Authorization Form includes information and authorization for:

- blood sugar testing.
- insulin or other medications.
- meal planning.
- a plan for hyperglycemia and hypoglycemia.

The diabetes educator will give you the School Communication and Treatment Authorization Form before discharge from the hospital. In the future you will need to obtain a new form before each school year.

### **Individual health plan**

The school nurse, in collaboration with parents and health care provider, will write an Individual Health Plan (IHP). This plan will outline your child's diabetes care needs for the school setting. The IHP is a tool that is used to share information with school staff who will be working closely with your child.

Occasionally, a child with diabetes may require a 504 plan in addition to an IHP. A 504 plan is written by school personnel to assure specific accommodations are available to children with diabetes in the school setting.





# Returning to school

It is important that you have food and medical supplies at school to treat low blood sugar and for daily diabetes care. We recommend that you establish a routine and location for diabetes care. These items should be kept in a specific location. The supply should be replenished on a regular basis.

## Diabetes school supplies checklist

- Blood glucose meter, "finger piker," lancets, and blood glucose test strips.
- Completed school form.
- Emergency contact phone numbers.
- Food and juice for treatment of low blood sugar. Keep low blood sugar treatment with you in the classroom and other locations as needed.
- School menu with carb information
- Glucagon emergency kit. Verify the emergency plan with the school nurse or administrator.
- Insulin. Make sure to date insulin and replace every 28 days once opened.
- Ketones strips for urine ketone testing or blood Ketone test strips and meter.
- Syringes or pen needles.
- For insulin pump users:* Make sure you have extra supplies (battery, back-up plan in case of pump failure, DKA decision tree).

## Attendance

Another important job for parents is to keep your child in school. Diabetes should not become a reason to stay home from school or get out of class. Occasionally, illness or severe low blood sugar may be a reason to stay home, but generally the attendance and academic performance of the child with diabetes should be no different than for any child.



Talk with your child about anxieties, school avoidance behaviors, and feelings of isolation throughout the year. Keep communication open with the teachers. Be a positive advocate for your child and help the school personnel understand the impact of diabetes on a child's life. Parents and school personnel should become allies and not obstacles to good care.

This information can also apply to child care settings and others who care for children with diabetes.

# Coping with diabetes

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Parents, their child with diabetes, and siblings usually have many thoughts and feelings when they first learn their child has diabetes. The purpose of this section is to give you information about what to expect and what can help you deal with your thoughts and feelings.

It is normal to feel surprised, shocked, numb, in disbelief, scared, sad, mad, overwhelmed, confused, worried, nervous, helpless, guilty, and stressed. Different people will feel different things at different times. Everyone goes through it in his or her own way. You might have some of these reactions, or even all of them.

Some people say that finding out one's child has diabetes is like going through the grief process: shock, disbelief and denial, anger, bargaining, and finally, adjustment. Don't be surprised if you, your spouse, your child with diabetes, and your other children – as well as other relatives – have different reactions.

Feeling really emotional can make it hard to concentrate or remember things. It also can make people irritable and may cause sleeping or eating problems. On the other hand, although they may feel upset, many people are very practical. After they learn their child will be okay, they just want to learn how to take care of diabetes.

Sometimes it's emotionally harder when you are first learning about diabetes. Other times, it "hits" you later.

Sometimes adjusting to diabetes can be overwhelming. It is not unusual to need extra help in dealing with the stress of a chronic condition such as diabetes. Sometimes families and children see a psychologist or clinical social worker to help them deal with this stress. We can help you find a good counselor if you would like one.

Some common worries that parents have when their child is first diagnosed are:

1. Will I be able to do everything? What if I make a mistake?
2. Will my child be healthy? Will they suffer from complications of diabetes?
3. What if the blood sugar is too high or too low?
4. What if my child won't cooperate, fights the shots, or doesn't pay attention to diet?
5. Will she be able to play sports, get married, have children? Will my child be teased or feel different? How do I help him deal with these things?
6. How will I be able to let my child go to other people's houses for overnights? How will we ever be able to get away?
7. How will the school deal with diabetes? Can I trust the school to take care of my child?
8. Will day care be able to take care of my child?
9. Do I have to quit my job?
10. How will we be able to take care of diabetes and still do activities, such as sports?
11. Will my insurance cover hospital stays, doctor visits, and medical supplies? What do I do if it doesn't?

Sometimes parents blame themselves for the diagnosis. Maybe they think they should have noticed the symptoms earlier, or should have called the doctor sooner. Or maybe they feel it's their fault because they, or someone else on their side of the family, has diabetes. Although guilt is often a normal parent reaction, we want to reassure you that it is not your fault your child has diabetes.

# Dealing with stress

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There are things that can help you cope with the stresses of diabetes. It will be harder in the beginning because everything is new and you haven't had a lot of practice yet. If you are already dealing with a lot of stress in your life, it may be harder.

Stresses may include a new baby, recent move, new job, job problems, mental illness (depression, anxiety, etc.), marital or family problems, death in the family, illness in another family member, little or no social support, financial problems, or unresolved problems from the past.

## What helps

These suggestions may help you and your family deal with diabetes:

- Learn about diabetes and how to take care of your child
- Seek support from family and friends
- Seek support, guidance, and education from the diabetes team
- Attend a diabetes support group or visit diabetes websites (see diabetes resources section)
- Focus on the present, try not to predict or worry about the future

## Role of social work

When your child is first diagnosed with diabetes, you will meet with a social worker. The social worker's job is to help you talk about your feelings, thoughts, and reactions to the diagnosis, as well as your worries and concerns.

The social worker will tell you about resources in the hospital and community. The social worker also can give you information about insurance and financial resources. The social worker will ask you questions about who is in your family, your work and financial situation, other stresses (including any other physical or mental illness in the family), and your support system.

The social worker can give you tips about how to cope with having diabetes in the family. The social worker may also talk with you about developmental issues and what to expect of your child at different ages. The social worker works closely with the rest of the diabetes team to help you deal with the impact of the new diagnosis.

In the clinic, the social worker will usually meet with you at your first or second follow-up appointment and then as needed. The social worker also can be called if you can't speak to him or her at your clinic visit.

## Role of the psychologist

The psychologist is available to you by appointment if you find that your child is having a particular difficulty with emotional adjustment of having diabetes or is dealing with another mental health condition (e.g., depression, anxiety) that is affected by the diabetes. Also, if your child is having difficulty with management of his or her diabetes during the transition into the teenage years, the psychologist can help provide support and guidance. The psychologist is at the clinic one day per week and is available by appointment. Follow-up appointments can be made as needed. The psychologist can refer for psychological testing if needed, or make a referral for more intensive therapy outside the diabetes clinic.

# Dealing with stress

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## **The role of the child life specialist**

Certified child life specialists are trained in child development and specialize in working with children in health care settings. They will address your child's need to understand and offer coping strategies to help adjust to a new diagnosis.

A child life specialist will meet with your child upon diagnosis in the hospital. The specialist may help your child understand diabetes through hands-on teaching, using a video, teaching dolls, and books. This can lead to your child expressing the feelings they may have about diabetes, pokes and injections, eating, concerns, or fears.

The child life specialist may teach relaxation or distraction techniques to help reduce stress or anxiety related to pokes or other fears. The specialist also may provide opportunities to role play or model talking with peers about diabetes.

During the School Re-Entry Program, a child life specialist visits your classroom to talk with your classmates about diabetes. This helps clear up the misconceptions many children and adults have about diabetes and can improve peer interaction. Please let the child life specialist or any member of the diabetes team know if you are interested in having a child life specialist visit your child's school.

A child life specialist also is available to meet with you during clinic visits. The specialist can provide follow-up support, including: emotional support, coping strategies, sibling support, help with pokes and injections, and resources.

# Reaction to stress

Many factors influence the way a child copes during stressful situations. They include:

- The child's age and the developmental level
- The seriousness of the situation and complications involved
- The ways the child's feelings are identified and acknowledged
- How information is given to the child
- Other stressful experiences the child has had
- The ways the child has coped during stressful times in the past



## The ways a child may behave under stress

Children have different ways of understanding and coping with stressful situations.

Many reactions depend on the individual child and the age or their developmental level. Provide your child with accurate, honest, and age-appropriate information. Encourage your child to ask questions to clarify any misconceptions. There are several ways a child may express worries or feelings.

Sometimes it is impossible for a child to express the feelings through words. It is important to provide other opportunities for this expression. Examples of the ways children may show how they are affected by a stressful situation may include:

- Regression or returning to earlier habits, such as bed-wetting, thumb-sucking, dependence on security objects
- Change in eating habits, overeating, or loss of appetite
- Change in sleeping habits, sleeping much more or less
- Becoming less involved at home, school, and social life
- Acting out behaviors through violence or defiant behavior
- Showing outbursts of intense feelings
- Clingy behavior, dependence on parents or caregivers, displaying feelings of jealousy or resentment
- Self-destructive behaviors or comments
- Avoiding family activities and denying the situation
- Minimizing the situation and pretending things are not as serious
- Becoming obsessed with the situation
- Having concerns of personal well-being or safety
- Declining school performance
- Displaying caregiver role or responsibilities

# Reaction to stress

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## Things you can do to help a child under stress

- Continue with your child's daily routine as much as possible.
- Continue to share information with your child and provide information to help them understand diabetes.
- Talk with your child life specialist about an age – appropriate explanation of diabetes and medical information.
- Provide ongoing opportunities for your child to ask questions.
- Keep in contact with the school support systems and provide them with updated information. Be available to receive information about how the child is coping.
- Encourage medical play with your child. This will provide an opportunity to use medical equipment, which helps them become familiar with the equipment they will use daily for their illness. It allows them to work through feelings such as fear, anger, and frustration. This type of play also allows the adults the opportunity to clear up any misconceptions the child may have about diabetes.
- Take advantage of the School Re-Entry Program provided by your child life specialist. The specialist will visit your child's class to teach the classmates about diabetes and clarify misconceptions they may have. The re-entry program will improve your child's experience in returning to class.
- Continue to maintain the child's normal and special activities as much as possible.
- Remember your family rules and stand by them. It is important, now more than ever, that your child can rely on the consistency and security of rules and discipline. Without this, your child may feel a loss of parental support and control.
- Remember that it is normal developmentally for school-age children to want to master skills, including diabetes-related tasks. Too much responsibility too early, however, can lead to "burnout" and noncompliance in later years. We recommend that you encourage your child to learn new skills in areas other than diabetes and very gradually help him master his diabetes skills and care.
- Parents and children should work as a team to take care of diabetes. Communicate regularly about what is going on in everyone's life.
- Find a place for diabetes in your life, but do not let it rule your life. Your child has diabetes; she is not diabetes. For example, "Anna has diabetes," not "Anna is diabetic."

# Development stages and responses

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## Infant/Toddler (0 to 2 Years)

- **Developmental stage:** Attachment to consistent caregiver; setting consistent limits and testing of those limits.
- **Fears:** Anxiety to people he is not familiar with on a regular basis; separation from main caregiver.
- **Intervention:** Establish routine around diabetes cares, allowing child to play with available limb (using hands when leg needs to be still for injection).
- **Distraction techniques:** Pop-up books, attachment objects (pacifier, blanket, stuffed toy), singing, blowing bubbles, music, sound books.

## Preschoolers (3 to 5 Years)

- **Developmental stage:** Magical thinkers, centered on self, may view painful experiences as a punishment for “bad” behavior.
- **Fears:** Loss of control, needles, being left alone, being physically restrained, separation from caregiver.
- **Interventions:** Medical play with equipment such as syringes without needles, bandages, and gloves to explore feelings about diabetes. Use short, simple explanations about what diabetes is and is not. Offer simple choices to allow your child to have control during diabetes care.
- **Distraction techniques:** Imaginary storytelling, I Spy books, blowing away pokes with bubbles or feathers, counting, visual tools (View-Master®).

## School-Age (6 to 11 Years)

- **Developmental stage:** Abstract thinking begins, reasoning, cause and effect.
- **Fears:** Death, body injury, fear of failure or not living up to others’ expectations, loss of control.
- **Interventions:** Need honest and straight-forward answers, offer choices and control in diabetes care, need information in advance to help develop coping strategies.
- **Distraction techniques:** Video games, seek-and-find books, sensory “squishy” tools, imagining a favorite place.

## Adolescents (12 Years and Older)

- **Developmental stage:** Centered on self, untouchable, indestructible, privacy, independence.
- **Fears:** Loss of control, disfigurement or scars, invasion of privacy, being different.
- **Interventions:** Communicate directly to child and involve in decisions about diabetes management, support from peers and support groups.
- **Distraction techniques:** Music through earphones, video games, visual tools, Lava® lamps.

# Establishing a routine

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The need for consistency and routine in daily life is essential for children. This is even more apparent when a child is diagnosed with diabetes. Your language and how you talk to your child can help establish a routine so that your expectations are clear. Clear expectations are crucial to help your child feel successful in maintaining diabetes.

Here are some phrases and words to help your child understand what you need from them.

1. Give a “prompting phrase” to signal the time to start.

*“It’s time for your injection.”*

2. Give your child direction of what you’d like him to do. Including a choice can help eliminate power struggles and unwanted behaviors.

*“Find your teddy bear to hold. How many times do you want to squeeze him, four or five times?”*

*“Have a seat on mom’s lap. Which finger should we use to check your blood sugar?”*

3. If your child “stalls,” make the choice for them.

*“It looks like it is hard for you to decide today. I’ll help you choose this time. We will use this finger.”*

If other stalling tactics are used, stop them immediately.

*“That is a good question. I will answer you when we are done.”*

*“Yes, you can get a drink of water after we are done with your injection.”*

4. Always acknowledge feelings. Praise your child for getting the task done.

*“I know you don’t want to have your poke. But your body needs insulin. You don’t have to like it, but we still have to do it.”*

*“That was a really hard job to get done, but I know you did the best job you could today. How can we make it better next time?”*

5. Establish a five-minute meeting (for children 10 years and older). Each day, sit down with your child for five minutes to review blood sugar records, insulin doses, and food intake. This ensures that everyone in the house is working as a team to care for the diabetes. This also minimizes missed insulin doses and blood sugar checks. Parents should initiate this meeting.



## Responsibility of diabetes care

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- Diabetes is a family disease and requires the active involvement of parents and care givers for many years
- Sharing the diabetes care can help prevent the cares from becoming the responsibility of one person and a “burden”
- The primary role of the child is to be a kid
- Parents hold the primary responsibility for diabetes cares at all times regardless of the child’s age

## Responsibility of diabetes care across the ages

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- There is no magic age for taking on the responsibilities of diabetes cares
- Ages 3 and under: Parents complete all cares
- Ages 4-7: Parents complete all cares and child learns to assist with cares
- Ages 8-12: Child can take some blood sugar checks and/or occasional shot if child feels comfortable. Adult must supervised these blood sugar checks and injections
- Ages 14-18: Child eventually is able to complete majority of diabetes cares with strong parental involvement, daily supervision, and support

# Resources at Children's

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There are many resources available at Children's Hospitals and Clinics of Minnesota to help you and your family live with diabetes.

## Diabetes support groups

The Diabetes Center offers diabetes support groups to parents, children, and teens. The diabetes support groups generally meet October through April on the second Tuesday of the month from 6:30 to 8 p.m. in the Garden View Medical Building. This is a great opportunity for parents and children to meet other families whose lifestyles are affected by diabetes. Parents, teens, younger kids (ages 5 to 8), and older school-age kids meet in separate groups. There is also a group for siblings.

## Family resource center

Children's family resource centers are a great resource for children and their families. The programs and services are dedicated to supporting and enhancing the well-being of families. In the resource centers, families can find up-to-date and reliable information about a particular diagnosis, locate community and financial resources, or just relax with a magazine and a cup of coffee.

When a child is in the hospital, it can mean a lot to stay linked to the outside world through the Internet and email or have easy access to a fax machine and photocopier. The staff can assist you with Internet use and research as well as locating other written materials and resources. The family resource centers offer families this technology free of charge.

The Kelsey Lynn Roberg Family Resource Center is on the fourth floor of the Garden View Medical Building at Children's – St. Paul, 651-220-6368. The Cargill Family Resource Center is on the second floor at Children's – Minneapolis, 612-813-6816.

## Children's website

[childrensMN.org/services/diabetes-endocrinology](http://childrensMN.org/services/diabetes-endocrinology)

Please explore this website for additional clinic resources and an online copy of our Diabetes Care Manual.

The financial resources department at Children's helps families apply for programs such as Medical Assistance (MA) and MinnesotaCare. Financial resources can also help you apply for Supplemental Security Income (SSI), another type of MA called Tax Equity and Fiscal Responsibility Act (TEFRA), or possible assistance through Children's.

Families of all income levels may be eligible for benefits. Call with questions about qualifying and assistance with the application process at either Children's – Minneapolis, 612-813-6432, or Children's – St. Paul, 651-220-6367.

## School re-entry program

Children's child life department offers a diabetes School Re-Entry Program. This program helps the classmates of the child with diabetes to better understand diabetes. Child life specialists talk with the children to clarify common misconceptions and help with peer interaction. Program services include providing resource materials, phone consultations, and a visit to the classroom.

A program can be designed to meet the individual needs of each child and family by collaborating with school personnel, family members, the patient, and Children's staff. The diabetes school program is not intended as education about diabetes; rather, it addresses the questions and concerns of the child's classmates. Call the child life department at 651-220-6465 for more information.

## Children's medical organizer

Children's Medical Organizer™ is a free, easy-to-use website that helps organize your medical health history. Users can keep track of immunizations, allergies, appointments, test results, and more. To learn more, visit [childrensMN.org](http://childrensMN.org) and click on Children's Medical Organizer.

## MyChildren's

MyChildren's allows you to view your child's medical record, including lab results, discharge information, and upcoming appointments. Please ask about getting signed up for these services at your clinic appointment.

## External resources

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There are several organizations that offer information and resources on diabetes. Some of them are listed below.

**American Diabetes Association (ADA)**  
[www.diabetes.org](http://www.diabetes.org)

### **Minnesota Office – Minneapolis/St. Paul**

Parkdale Center  
5100 Gamble Drive, Suite 394  
St. Louis Park, Minnesota 55416  
763-593-5333  
Fax: 952-582-9000

### **Wisconsin – Madison**

2800 Royal Ave.  
Suite 207  
Madison, Wisconsin 53713  
608-222-7785  
608-222-7795 fax

### **Wisconsin – Milwaukee**

375 Bishop's Way  
Suite 220  
Milwaukee, Wisconsin 53005  
414-778-5500  
262-797-9270 fax

The American Diabetes Association is the nation's leading nonprofit health organization providing diabetes research, information, and advocacy. Its mission is to prevent and cure diabetes and to improve the lives of people affected by diabetes.

To fulfill this mission, the American Diabetes Association (ADA) funds research; publishes scientific findings; provides information and other services to people with diabetes, their families, health care professionals, and the public; and advocates for scientific research and for the rights of people with diabetes.

ADA has several publications, including *Diabetes Forecast* magazine for members (6 issues/year). It sponsors camps for children with diabetes (Camp Daypoint and Camp Needlepoint). The Minnesota affiliate serves residents of Minnesota and western Wisconsin.

### **Children with Diabetes**

[www.childrenwithdiabetes.com](http://www.childrenwithdiabetes.com)

Children with Diabetes is a web-based-only resource. It is very comprehensive, providing a lot of helpful information with sections for parents, children and teens, and professionals. It has a section with links to other websites.

### **JDRF: Improving Lives. Curing Type 1 Diabetes (Minnesota-Dakotas chapter)**

email: [minndakotas@jdrf.org](mailto:minndakotas@jdrf.org)  
[www.jdrf.org/minndakotas](http://www.jdrf.org/minndakotas)  
3001 Metro Drive, Suite 100  
Bloomington, MN 55425  
952-851-0770  
952-851-0766 fax

The JDRF is the world's leading nonprofit, non-governmental funder of diabetes research. It is the only major diabetes organization focused exclusively on research.

The primary goal of the JDRF is to fund research that will cure or prevent diabetes and its complications. JDRF gives more money directly to diabetes research than any other private health agency in the world. Its biggest local fundraiser is the Walk to Cure Diabetes held every February at the Mall of America.

Members receive a quarterly magazine, *Diabetes Countdown*. Other publications include *Countdown for Kids* and *Teen Countdown*. The local chapter has a monthly electronic newsletter with information about support groups, Mom's Night Out, Just for Dads, and other events. You can register to receive this newsletter on the website. The website also has a section about life with diabetes. The website and magazines provide current information on diabetes research.

### **Other support groups**

See the JDRF/MinnDakotas website for meeting dates and locations for other support groups in the state.

# Financial resources

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Minnesota has several insurance programs available to people who do not have their own insurance.

## **Minnesota Health Care Programs**

Go the website at [www.dhs.state.mn.us/healthcare](http://www.dhs.state.mn.us/healthcare) and click on the link for 'Minnesota Health Care Programs' for more information on the different program options. You can also call at 651-431-2670 (Twin Cities metro area) or 800-657-3739 (outside Twin Cities metro area) with questions.

## **Medical Assistance (MA)**

Medical Assistance (MA) helps people pay for their medical care when they need assistance and qualify for the program. MA can pay current and future medical bills. In some cases, MA will pay medical bills for three months retroactively.

Apply through your local county social services office. Your income must be below a certain level to qualify.

## **Minnesota Care**

MinnesotaCare is a state-subsidized health insurance plan for Minnesotans who do not have insurance and do not qualify for medical assistance. The family pays a premium based on income, family size, and number of people covered. To apply, call 651-297-3862 (metro) or 800-657-3672 (greater Minnesota) or visit [www.dhs.state.mn.us](http://www.dhs.state.mn.us).

## **Minnesota Comprehensive Health Association (MCHA)**

MCHA is not a state-funded program, but a non-profit created by the state legislature in 1976. It offers insurance to Minnesotans who have been turned down for individual health insurances in the private market due to a pre-existing condition and who do not qualify for other programs, 1-866-894-8053 or visit [www.mchamn.com](http://www.mchamn.com)



# Diabetes books

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There are many written materials related to diabetes and these are a few of our favorites.

## Books for parents

"101 Tips for Improving Your Blood Sugar," by the American Diabetes Association

"Diabetes Care for Babies, Toddlers, and Preschoolers," by Jean Betschart

"Understanding Insulin-Dependent Diabetes," by the Children's Diabetes Foundation at Denver

"Meditations on Diabetes," by Catherine Feste

"Raising a Child With Diabetes," by Linda Siminerio

"An Instructional Aid on Insulin-Dependent Diabetes Mellitus," by Luther Travis

"The Ten Keys to Helping Your Child Grow Up With Diabetes," by Tim Wysocki

"Even Little Kids Get Diabetes," by Connie White-Pirner

"Caring for the Diabetic Soul," by the American Diabetes Association

"Diabetes," by Judith Peacock

"Psyching out Diabetes," by Richard Rubin

"Sweet Kids," by Betty Page Brackenridge and Richard Rubin

"Pumping Insulin: Everything You Need for Success With an Insulin Pump," by John Walsh and Ruth Roberts

"The Diabetes Carbohydrate and Fat Gram Guide," by Lea Ann Holzmeister

## Books for children

"Getting a Grip On Diabetes," by Spike and Bo Nasmyth Loy, Janet Silverstein, and Marc Weigensberg

"Taking Diabetes To School," by Kim Gosselin

"Matthew Takes His Shot," by Owen Coleman

"Sugar Isn't Everything," by Willo Davis-Roberts

"The Dinosaur Tamer and Other Stories for Children With Diabetes," by Marcia Mazur

"A Magic Ride in Foozbah-land: An Inside Look at Diabetes," by Jean Betschart

"In Control: A Guide for Teens With Diabetes," by Jean Betschart and Susan Thom

"Young People and Chronic Illness: True Stories, Help, and Hope," by Kelly Huegel

"Growing Up With Diabetes," by Alicia McAuliffe

"The Gift of the Pirate Queen," by Patricia Reilly Giff

"I'm Tougher Than Diabetes," by Alden Carter

# Online resources and magazines

## Social media resources

For more information about how others just like you are surviving and even thriving with diabetes, check out these YouTube videos. Please be aware that we do not manage or monitor these sites, nor do they represent Children's or the opinions of our clinic.

## YouTube



**What NOT to say to the parent of a Type 1 Diabetes**  
by miscellaneoust



**Athletes with Diabetes (Interview Mash-Up!)**  
by dLifedotcom



**The Diabetes Rap**  
by lwproductions73



**Inspirational People with Diabetes**  
by dLifedotcom



**Nick Jonas & Larry King: Live with Diabetes**  
by AmericanDiabetesAssn

## Blogs

[www.sixuntilme.com](http://www.sixuntilme.com) – blog written by Kerri Sparling, who was diagnosed with Type 1 at the age of 6, in 1986. She's now a wife and mother, and living a very full and healthy life, with diabetes!

[scottsdabetes.com](http://scottsdabetes.com) – personal blog written by Scott Johnson who has lived with Type 1 diabetes since 1980. He lives in Minnesota and is living well with diabetes!

[www.daddybetes.com](http://www.daddybetes.com) – written by a dad whose daughter has type 1 diabetes.

## APPS

- Go Meals
- Carb Counting With Lenny
- Glucose Buddy
- Managing Type 1 Diabetes: A guide for kids and their families
- WaveSense Diabetes Manager

# Online resources and magazines

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## Websites:

[www.jdrf.org](http://www.jdrf.org) – get local chapter info, support groups, etc.

[www.tudiabetes.org](http://www.tudiabetes.org) – a community of people touched by diabetes, run by the Diabetes Hands Foundation

[www.diabetesmine.com](http://www.diabetesmine.com) – “site created by and for patients as a ‘diabetes newspaper with a personal twist’.”

[www.childrenwithdiabetes.com](http://www.childrenwithdiabetes.com) – online community for kids, families, and adults with diabetes.

[www.teamtype1.org](http://www.teamtype1.org) – Team Type 1 began as a grassroots initiative to motivate people to take control of their diabetes using cycling as a platform. It has grown to become a world-class athletic program for athletes with diabetes, including a professional men’s cycling team, poised to compete at the 2012 Tour de France. Founded by Phil Southerland, who was diagnosed with diabetes at the age of 7 months.

<http://caloriecount.about.com/cc/recipeanalysis.php> – on-line tool from **Calorie-Count.com** to help with recipe analysis. Calorie-Count also offers a free calorie counting mobile app.

[www.barbaradaviscenter.org](http://www.barbaradaviscenter.org) – Barbara Davis Center for Children Diabetes

[www.diabetes.org](http://www.diabetes.org) – American Diabetes Association

[www.niddk.nih.gov](http://www.niddk.nih.gov) – U.S. Department of Health and Human Services National Institute of Diabetes and Digestive and Kidney Disease

[www.myglu.org](http://www.myglu.org) – Type 1 Diabetes network

[www.typeonenation.org](http://www.typeonenation.org) – Type One Nation

[www.diabetic-lifestyle.com](http://www.diabetic-lifestyle.com) – Diabetic Lifestyle

[www.diabeticgourmet.com/diabetic](http://www.diabeticgourmet.com/diabetic) – Diabetes Gourmet Magazine



[www.diabetesnet.com](http://www.diabetesnet.com) – Diabetes Mall

[www.angelrose.com/famousdiabetics](http://www.angelrose.com/famousdiabetics) – Famous Diabetics

[www.letsconnect.org](http://www.letsconnect.org) – Teens With Chronic Illness

[www.insulindependence.org](http://www.insulindependence.org) – Insulin Dependence

[www.behavioraldiabetesinstitute.org](http://www.behavioraldiabetesinstitute.org) – Behavioral Diabetes Institute

## Magazines

*Diabetes Self-Management*

*Countdown, Teen Countdown, and Kids Countdown*  
by Juvenile Diabetes Research Foundation

*Diabetes Forecast*  
by American Diabetes Association

## Other resources

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If you are having problems affording insulin and supplies, there are several possible options for assistance. Many are based on income and some will not help if you already have insurance or are not a US citizen. Contact the resources if you have questions.

### **Partnership for Prescription Assistance**

[www.pparx.org](http://www.pparx.org) or [www.pparx.org](http://www.pparx.org) or call 1-888-477-2669. They provide information on different assistance programs from different companies (eg-Lilly, NovoNordisk, Sanofi-Aventis). Usually to qualify for these programs you must currently be uninsured, meet the income guidelines and be a US citizen or legal resident. Sometimes people with insurance have been able to get help, so call the individual programs to check.

Families without prescription coverage, can look into **Together RX Access** [www.togetherrxaccess.com](http://www.togetherrxaccess.com) or 1-800-444-4106.

**Walgreens has a Prescription Savings Club** that has discounts on prescriptions; call 1-866-922-7312.

### **United Healthcare Childrens Foundation**

[www.uhccf.org/apply\\_applicant.html](http://www.uhccf.org/apply_applicant.html) can provide grants to families with children under age 16 with inadequate or no insurance coverage who meet financial criteria.

If you live in Wisconsin, the state now has a program for kids younger than 19 without insurance, regardless of income. It is called **Badger Care Plus** and you can get more information at this website - <http://www.dhs.wisconsin.gov/badgercareplus/> - or by calling member services at 1-800-362-3002.

### **The National Underinsured Resource Directory**

<http://www.patientadvocate.org/NURD/index2.php>

They help underinsured individuals and families locate valuable resources and seek alternative coverage options or methods for better reimbursement. If you have health insurance but are still struggling to meet your out-of-pocket cost you would be considered underinsured.

### **The Patient Advocate Foundation (PAF) Co-Pay Relief Program (CPR)**

currently provides direct financial support to insured patients who meet financial and medical qualifications to access pharmaceutical co-payment assistance. Diabetes is one of the conditions included. The program offers personal service to all patients through the use of phone counselors; personally guiding patients through the enrollment process. You may reach the services and get more information on the website CPR team by calling 1-866-512-3861. You can also access <http://copays.org/>

### **Supplies for Children with Diabetes Foundation (SCWDF)**

<http://www.cwdfoundation.org/Supplies.htm>

The mission of SCWDF is to provide short-term diabetes supplies for children with type 1 diabetes who are in emergency situations in which their families are unable to obtain the basic supplies for diabetes care. Go to the website for more information and to access the application.

### **NeedyMeds**

<http://www.needy meds.org/index.shtml>

NeedyMeds is a 501(c)(3) nonprofit with the mission of helping people who cannot afford medicine or health care costs. The information at NeedyMeds is available anonymously and free of charge. NeedyMeds does not have a phone help line. All the NeedyMeds information is available on the website.

### **American Diabetes Wholesale**

<http://www.americandiabeteswholesale.com>

In Florida – for cheaper prices on supplies

### **Community Assistance Program USA Drug Plan Drug Discount Program**

[www.SunnyAllDay.com](http://www.SunnyAllDay.com)

Prescription discount card



# Planning for home

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We don't expect the children to perform all the diabetes skills on their own, regardless of age. Parents have responsibility for helping with injections, dose calculations or adjustments; and planning or supervising meal choices, no matter the age of your child.

Please make sure that at least two caregivers can perform the items listed below before going home.

## Checklist

- Know how to test a blood sugar and give an insulin injection.
- Know how and when to check for ketones.
- Know how and when to give glucagon.
- Know how to count carbohydrates.
- Know when to give each type of insulin.
- Know how to treat a low blood sugar.

Other things to consider:

- Pick-up prescriptions from pharmacy and double check that they are correct.
- Set-up a meeting with the school nurse/ daycare to discuss diabetes care at school/daycare.
- Check with insurance to see if it would be more cost effective to use a mail order company for prescriptions.

## Educating other caregivers

It is the families responsibility to teach other caregivers about diabetes care. Our clinic does offer a Diabetes Basics Class for a fee if other caregivers are interested in attending. Please contact the clinic for further information on this class.



# McNeely Pediatric Diabetes Center

## **Children's - Minneapolis**

Tower, 4th floor  
2525 Chicago Avenue South  
Minneapolis, MN 55404

## **Children's - St. Paul**

Garden View Medical Building  
347 North Smith Ave., Suite 404  
St. Paul, MN 55102

## **Children's Clinics - Woodwinds**

Woodwinds Health Campus  
1825 Woodwinds Dr., Suite 400  
Woodbury, MN 55125

## **Children's - Minnetonka**

6060 Clearwater Drive, Suite 204  
Minnetonka, MN 55343  
952-930-8123

## **Clinic hours:**

Monday - Friday, 8 a.m. to 4:30 p.m.

651-220-6624 Clinic  
651-220-6064 Fax  
651-220-6818 Appointments

