Welcome

Dear Family,

The diagnosis of diabetes is often very sudden and surprising. There are many things that you will need to learn to keep your child healthy and safe. Learning will come in stages. Today's class is called "Diabetes Safety". You will then return for "Diabetes Basics" at a later date to build on this information.

Between today and the basics class, you will be provided with daily phone support through our diabetes hotline. Our Certified Diabetes Educators on the hotline will answer questions and adjust your child's medications.

This safety binder is designed to provide you with the information you need to care for your child for the first few weeks after being diagnosed with diabetes.

At the back of this binder, you will find an appendix with an introduction to some of the topics you will learn in basics.

At CHLA, our team of doctors, nurse practitioners, nurses, dietitians, social workers and psychologists is here to help you throughout the entire process. Our goals are to improve the lives of children and families of all cultures living with diabetes while working towards prevention and a cure.

Thank you,

Your CHLA Diabetes Team

Our topics for this safety class include the following:

- ☐ The different types of diabetes
- ☐ The role of insulin and sugar in the body
- ☐ Target blood sugar range
- ☐ How to monitor blood sugar levels
- ☐ Signs, symptoms and treatments of low blood sugar levels
- ☐ Signs, symptoms and treatments of high blood sugar levels
- ☐ Technique and location for insulin injections
- ☐ The role of nutrition in blood sugar management
- ☐ Contact information for the diabetes team and what to expect for follow-up care

Contact Information

Diabetes Hotline:

(323) 361-2311

Monday – Friday, 8:30AM- 4:00PM:

Call and leave a voicemail with the following information:

- Child's name and date of birth
- Call back name and phone number
- Brief reason for calling
  (i.e. daily call, sick day, ketones)

A nurse will call you back by the end of the day if you call before 3PM.

Weekends, after hours, holidays:

Do not leave a voicemail.

Call the hotline and press "0".

Ask for "diabetes doctor on call" and the doctor will call you back.

Appointments or cancellations:

(323) 361-4606

Prescription refills:

(323) 361-4427

FAX: (323) 361-8064

If this is an **urgent** request (needed same day), please state that in your message. If not urgent, allow up to 2 business days to complete your request.

When should I call you?

When your child first learns about the diabetes diagnosis we will call you every day. After those first weeks, we will assign you a nurse care manager who will tell you when to call next. You should call if you have concerns about illness, blood sugars, or have questions.

Can I email you?

Email can be used for non-urgent needs or follow up information. This will not replace daily calls to the hotline.

Nurse Educator

EndoNurse@chla.usc.edu

Registered Dietitian

EndoRD@chla.usc.edu

Social Worker

EndoSocialWorkers@chla.usc.edu

When is my next diabetes appointment?

Feelings and Diabetes

All emotions about the diabetes diagnosis are completely normal.

Shock and Disbelief

The diagnosis is sudden and can be shocking for families, sometimes causing anxiety or anxious feelings. With time, this will become the "new normal."

Grief

It is common for families to grieve for the life they had previously planned for their child.

Sadness

Diabetes can provoke feelings of sadness due to all the changes that you need to make to your previous lifestyle.

Anger

Managing Diabetes is a job that you did not expect to have. It can cause both parents and children to feel angry and frustrated about being given this challenge in life.

Fear

Some parents and children worry about what diabetes will look like and feel like as they move from day to day.

Guilt Although diabetes can partly be genetic, some families feel as though they could have prevented the condition from occurring or should have "caught it" earlier.

What can I do to help my child with these emotions?

Modeling positive behaviors for your child is important, especially in times of stress. Examples of positive behaviors include talking about your feelings, practicing self-care, and asking for help.

Our team has social workers and psychologists available to discuss tools for positive emotional coping.

Working with a psychologist or social worker can help you fit diabetes into your life the way that feels most comfortable to you and your child.

Where can I find support outside of the hospital?

Your local American Diabetes Association or JDRF office can help you get in touch with other families who have children diagnosed with diabetes.

When you return for diabetes basics class, you will be able to meet other families and learn about support in the community.

What is Diabetes

What is diabetes?

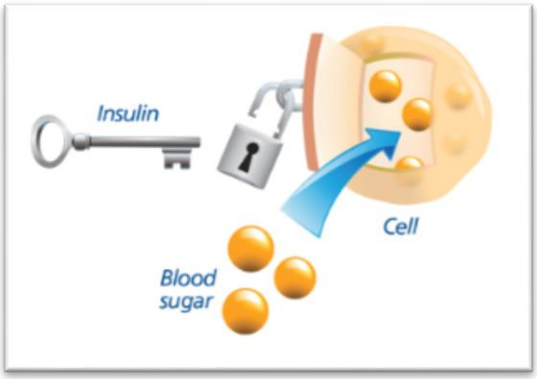
Diabetes is a chronic (or long-lasting) condition that is seen in children and adults. When people have diabetes they are unable to use and store sugar (glucose) because the body is unable to make or use **insulin** properly.

What is insulin?

Insulin is a hormone that helps to lower the blood sugar. Insulin moves sugar from the bloodstream into the cells. Cells are the building blocks of all life and use sugar for energy. Without insulin, the body cannot use food for energy.

Is insulin bad for the body?

No. Insulin is naturally produced by the body. Insulin helps the body use food for energy. Without insulin, blood sugars will run high and damage the body.



What is blood glucose (BG)?

Blood glucose is the sugar in your blood that comes from the food you eat. Blood glucose is also created from the stored sugar in the liver. The term **blood sugar** can also be used. For simplicity, we will use the term blood sugar in this guide.

Role of sugar and insulin

Insulin is the “key” that unlocks the cell wall to let sugar in. Sugar is then used for energy in our bodies.

If there is not enough insulin, the sugar stays in the blood and cannot get into the cell. This results in a high blood sugar level and very hungry cells.

What happens in the body of someone who doesn’t have diabetes?

1) Food is digested and turns into sugar.
2) Sugar is moved to the bloodstream and the blood sugar rises.
3) Insulin moves to the bloodstream and then moves sugar into cells.
4) The cells use the sugar for energy which makes the blood sugar levels go down.

Types of Diabetes

What is Type 1 Diabetes?

Type 1 Diabetes is an autoimmune condition where the body attacks the cells that make insulin (beta cells). The risk of developing it may be caused by both genes and an environmental trigger. When someone has Type 1 Diabetes, they lose the ability to make insulin.

How do we treat Type 1 Diabetes?

The only treatment for Type 1 Diabetes is insulin.

Is there a cure?

Currently, there is no cure for Type 1 Diabetes. This means that all people with Type 1 Diabetes need insulin from an outside source, such as from insulin injections or from an insulin pump.

Can my child live a healthy life?

Yes, there are many people living healthy and fulfilled lives with diabetes. When diabetes is well managed, the risk of complications is less.

Are there other related conditions?

Some people with Type 1 Diabetes may be at risk for other autoimmune conditions. Your diabetes team will help monitor for those signs and symptoms.

Are my other children at increased risk of developing Type 1 Diabetes?

The most recent data shows that risk of Type 1 Diabetes is about 1 in 300 in the general population. The risk for family member of people with Type 1 Diabetes is 1 in 20.

What tests are being run?

The doctors may run tests to see if your child is still making insulin and if they are making specific antibodies related to Type 1 Diabetes. These tests take time to process, and the doctor will talk to you about the results when you come in for follow up.

What is a “honeymoon phase”?

After a person is diagnosed with Type 1 Diabetes, they may still be making small amounts of insulin. This is called the “honeymoon phase”, where less insulin may be needed. The honeymoon phase lasts anywhere from a month to 2 years. During this period some families feel that their child’s diabetes is “cured.” This is not the case, and eventually your child’s need for insulin will increase. It is important to follow the recommendations of your Diabetes Team during this time.

Types of Diabetes (cont.)

What is Type 2 Diabetes?

Type 2 Diabetes is a condition where the body can still sometimes make insulin, but either there is not enough insulin or the insulin does not work well.

How do we treat Type 2 Diabetes?

Treatment options can include one or more of the following: diet and exercise, oral medication, and insulin.

Can my child live a healthy life?

Yes. We encourage children to add vegetables, fruits, and whole grains into their diet. It is important to get both the recommended amount of exercise and the medication treatment.

Are there other related conditions?

Obesity, high blood pressure, and high cholesterol are some related conditions. It is important to talk to your Diabetes Team about conditions related to Type 2 Diabetes.

What is Secondary Diabetes?

Secondary Diabetes is a form of insulin resistance (the body not responding to insulin) or insulin deficiency (not enough insulin). It can be caused by some medications or other health conditions. Corticosteroids are a common type of medication that may cause insulin resistance.

How do we treat Secondary Diabetes?

Treatment using insulin may be necessary at all times or only at certain times, depending on the cause of the insulin resistance.

What is Cystic Fibrosis-Related Diabetes?

Cystic Fibrosis-Related Diabetes (CFRD) is a form of diabetes that is common in people with Cystic Fibrosis and is a result of insulin deficiency or resistance.

What is Monogenic diabetes?

Monogenic diabetes is a rare form of insulin resistance or insulin deficiency. ***Maturity-onset diabetes of the young (MODY)*** is often recognized in children or teenagers and is genetically inherited or passed from family genes. ***Neonatal diabetes*** is diagnosed in the first 6 months of life. This form of diabetes either goes away during infancy, with the possibility of returning later in life, or it can be a lifelong condition.

Checking the Blood Sugar

What is a blood sugar target range?

A target range is considered the safe range for blood sugars. When we aim for blood sugars to be in this range, it helps to avoid both immediate and long-term side effects.

What is my child's target range?

Between _____ - _____ **during the day**

Between _____ - _____ **during the night**

This range might change based on age, illness, exercise, and other factors.

How do I know if my child is within their target range?

The best or most accurate way is by checking their blood sugar using a glucometer (commonly called a meter). Your child might also show signs that they are not within target (i.e. using the bathroom a lot or being shaky).

How often should we be checking my child's blood sugar?

We recommended checking the blood sugar multiple times a day depending on your child's individual treatment plan.

Some examples of when to check may include:

- Before meals and snacks
- Before bed
- During the middle of the night
- Signs or symptoms of a high or low blood sugar
- Before/during/after exercise

How do I check the blood sugar?

Step 1:

Always start with clean and dry hands!

Warm finger and hold pressure on tip of finger.

Step 2:

Use outer edge or top of finger.

Try not to use the middle of the finger pad.

Step 3:

Squeeze out a drop of blood by pushing the bottom of your finger towards the top.

Step 4:

Hold meter at a downward angle. Place strip directly over the drop.

Logging the Blood Sugar

Why keep a blood sugar log?

A blood sugar log or record is very important for successful diabetes management. The log helps you to see patterns of high, low, or in target numbers. These patterns help us see if we need to make changes in the treatment plan.

What to include in the log:

- **Time**: Write the time blood sugar reading was taken
- **BG** – Write what the blood sugar reading was from the meter
- **G-** Write how many grams of carbohydrates eaten
- **Insulin** – Write how many total units of insulin were given
- **Notes** – Write down anything that may impact or affect the blood sugars such as exercise, illness, or medications taken

What is a pattern?

A pattern is a trend in the blood sugars that lasts 3 or more days.

Do I have to write it down?

We strongly recommend you write this information down **every day**. It helps you to understand the connection between food, exercise, and blood sugars. Plus, writing this information makes it very easy to report blood sugar numbers to the hotline nurses during your daily call.

When should I call?

After you first diagnosed with diabetes, you will be in contact with a diabetes nurse daily. Call the hotline if you see numbers trending or moving upward or if you see unexplained low blood sugars. This may mean a change is needed in their insulin dosage. The Diabetes Hotline number is (323) 361 2311.

Date	Breakfast	Snack	Lunch	Snack	Dinner	Bedtime	12 am	3 am	Notes
Monday 2/6	Time: 6:30AM BG: 167 / 58 g Insulin: 5 u	Time: 10:00AM BG: 100 / 15 g Insulin: 1 u	Time: 12:30PM BG: 221 / 65 g Insulin: 6 u	Time: 3:30PM BG: 312 / 0 g Insulin: 4 u	Time: 6:50PM BG: 62 / 70 g 4 oz juice= 82 Insulin: 4.5 u	Time: 9:45PM BG: 140 / 0 g Insulin: 0 u	BG: 207 Insulin: 1 u	BG: 133 Insulin: 0 u	9:30PM 10 units of Lantus Bike ride for 30 minutes at 4PM
Tuesday	Time: _____ BG: ____/___ g Insulin: ____ u	Time: _____ BG: ____/___ g Insulin: ____ u	Time: _____	Time: _____	Time: _____	Time: _____	BG: ____ Insulin: ____ u	BG: ____ Insulin: ____ u	
Wednesday	Time: _____ BG: ____/___ g Insulin: ____ u	Time: _____ BG: ____/___ g Insulin: ____ u	Insulin: ____ u	Insulin: ____ u	Insulin: ____ u	Insulin: ____ u	BG: ____ Insulin: ____ u	BG: ____ Insulin: ____ u	
Thursday	Time: _____ BG: ____/___ g Insulin: ____ u	Time: _____ BG: ____/___ g Insulin: ____ u	Time: _____ BG: ____/___ g Insulin: ____ u	Time: _____ BG: ____/___ g Insulin: ____ u	Time: _____ BG: ____/___ g Insulin: ____ u	Time: _____ BG: ____/___ g Insulin: ____ u	BG: ____ Insulin: ____ u	BG: ____ Insulin: ____ u	
Friday	Time: _____ BG: ____/___ g Insulin: ____ u	Time: _____ BG: ____/___ g Insulin: ____ u	Time: _____ BG: ____/___ g Insulin: ____ u	Time: _____ BG: ____/___ g Insulin: ____ u	Time: _____ BG: ____/___ g Insulin: ____ u	Time: _____ BG: ____/___ g Insulin: ____ u	BG: ____ Insulin: ____ u	BG: ____ Insulin: ____ u	

Already have the Spanish version to place here.

Low Blood Sugar

What is a low blood sugar?

For your child, a low blood sugar (or hypoglycemia) is defined as a blood sugar level less than

_____ mg/dL.

What causes a low blood sugar?

A low blood sugar can be caused by too much insulin, not finishing food with carbohydrates, exercise, illness, or other factors.

What are the signs of a low blood sugar?

What should I do?

Give sugar! Do **not** treat with food like milk, chocolate or crackers – use simple sugar sources. See the next page for steps and examples.

Treating Low Blood Sugars

1) Check

- If symptoms are present, check blood sugar immediately.
- If blood sugar is less than _____ mg/dl you must treat.

2) Treat

- Give ____g of a simple sugar source. Some examples are:

			
___ Oz	___ Tbsp	__ Tablets	__ Skittles

3) Recheck

- Wait 15 minutes and recheck blood sugar.

4) Repeat

- If blood sugar is still under _____ mg/dL, repeat steps 2 and 3.
- If blood sugar is not above _____ mg/dL after 3 treatments, call Diabetes Hotline at **(323) 361 2311.**

5) Eat

If blood sugar is above _____ mg/dL, and it is more than one hour away from a meal or snack, give a ____ gram complex carb snack without insulin. See examples of complex carb snacks on next page.

Bedtime and Overnight

Are bedtime and overnight checks important?

Yes. Checking the blood sugar in the middle of the night helps you keep your child safe. Expect to check the blood sugar every 3-4 hours during the night for the first 1-2 weeks.

Are bedtime and overnight checks going to continue forever?

Off and on. There are many reasons you will want to check the blood sugar overnight in the future. Some reasons to check over night include: if your child is sick, if insulin doses have changed, or if they experienced many highs and lows during the day.

Should I treat lows differently at night?

If your child's blood sugar is under 70mg/dL, Follow the same rules as during the day.

Once your child is above 70mg/dL give them a _____ gram complex carb snack **without insulin**. This helps your child from dropping again in the middle of the night. See the examples to the right.

Should I give fast acting insulin at night?

Yes. If your child is over their nighttime target range, an insulin injection may be necessary. At bedtime and overnight, doctors may suggest a reduced insulin correction scale to prevent lows. (See page 22)

How do I know if my child is having low blood sugars at night?

Some signs of nighttime lows are:

Night sweats

Vivid dreams or night terrors

Waking up hungry or with headache

If the blood sugar is low or high when your child first wakes up.

How can I prevent an overnight low blood sugar?

If your child's blood sugar is under 100mg/dL before bed or during the night, give a ___ gram complex carb snack **without insulin.**

What is a good snack to prevent bedtime lows?

We recommend complex carb snacks that have protein, fat, and carbohydrates. See the examples below:

___ oz of milk

_____ oz yogurt

_____ crackers + cheese

_____ bread + teaspoon peanut butter

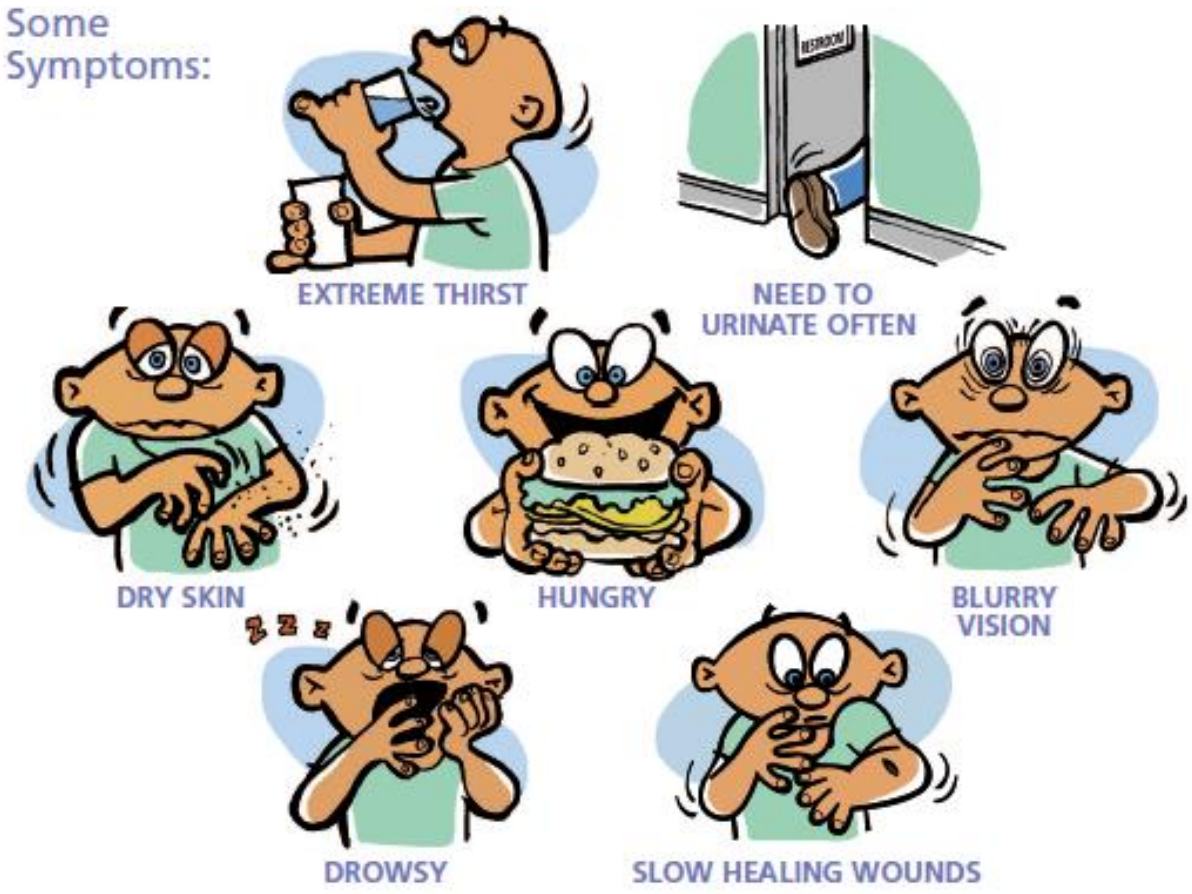
High Blood Sugar

What is a high blood sugar?

For your child, a high blood sugar (or hyperglycemia) is a blood sugar level more than _____ mg/dL during the day and more than _____ mg/dL during the night. This number may change.

What causes a high blood sugar?

A high blood sugar can be caused by not taking enough insulin, eating without insulin, miscalculating carbs, exercise, stress, illness, and other factors.



What should I do?

Follow the medication plan recommended by your doctor. Call the Diabetes Hotline (323) 361 2311 if blood sugars remain above ____ mg/dL for two or more checks in a row.

Medications

Why can't my child with Type 1 Diabetes take a pill to treat their diabetes?

Insulin is not available in a pill form because our stomach acid would destroy insulin (which is a hormone).

If your child has Type 1 Diabetes, that means they have lost (or in the process of losing) the ability to make insulin. If someone cannot make insulin, they will need to inject insulin to replace what their body cannot make on its own.

Oral Medications

Some people that still make insulin, such as those with Type 2 Diabetes, can take oral medications to make their existing insulin stronger and more effective.

The most common medication is called metformin.

How does metformin work in the body?

Metformin lowers blood sugar levels by helping the body's own insulin work better.

What do I need to know before giving metformin?

It is recommended that your child take metformin **with food.** It can take a few days or even weeks for the medicine to work well. Possible side effects include: upset stomach, nausea, vomiting, diarrhea, and/or decreased appetite.

Insulin

If your child is not making enough (or any) insulin, then they may be placed on a treatment plan that includes insulin.

Can my child take insulin once a day?

If your child has Type 1 Diabetes, the most common treatment plan includes multiple injections a day called a **Basal Bolus Regimen**.

If your child has Type 2 Diabetes, they may be able to take an insulin injection once a day if their body makes some insulin during the day.

What is a Basal Bolus Regimen?

With this routine, insulin is given in a way that imitates the body's natural production of insulin and how the pancreas should work. Two types of insulin are given: **long-acting (basal)** and **rapid-acting (bolus).**

When using a Basal Bolus plan, children with diabetes can eat different amounts of food meal-to-meal and at the times they want.

Keep reading on the next page to learn more about insulin.

Long-acting Insulin

My long-acting insulin is _____

Long-acting insulin (or **basal** insulin) imitates our body's natural function by releasing insulin slowly throughout the day and night.

What does it look like?

How long does long-acting insulin work?

Most long-acting insulins work slowly and continue to work for up to 24 hours. Some long acting insulins work for only 12 hours and need to be given twice a day.

When do I give long-acting insulin?

Give long-acting insulin at the same time every day. It is important that you **never** miss it. You can give long-acting insulin at the same time as rapid-acting insulin, but it must be as a separate injection at a different site.

Where do I give long-acting insulin?

Give long-acting insulin in the upper hip or abdomen/stomach. Do not give this insulin in the abdomen area if your child is under 8 years of age or if they have strong stomach muscles.

What is the dose?

This dose remains the same until a medical professional recommends you change it. Today, the long-acting insulin dose is _____ units at _____. Remember, the number of units you give is determined by your doctor and does not change based on the blood sugar or food intake.

My rapid acting insulin is _____

Rapid-acting insulin (or **bolus** insulin) is given throughout the day to prevent blood sugars from going high from food intake and to correct high blood sugar levels.

What does it look like?

How long does it work?

Rapid-acting insulin starts to work in 5-15 minutes. It has a peak effect (when it's the most effective) at 1 hour after it is given. It completes its job after about 2-3 hours.

Where do I give rapid-acting insulin?

Rapid-acting insulin injections are given into upper arm, thigh, stomach, and upper hip.

When do I give rapid-acting insulin?

Rapid-acting insulin is given before eating all meals and snacks containing carbohydrates. It can also be given to correct a high blood sugar if it has been at least 2 hours since the last injection or food intake.

What is the dose?

The dose of rapid-acting insulin depends on the current blood sugar level, how many carbohydrates you will eat or drink, and when the last rapid-acting insulin injection was given. You can learn how to calculate the dose on page 22.

Injection Technique

Where can I give rapid-acting insulin?

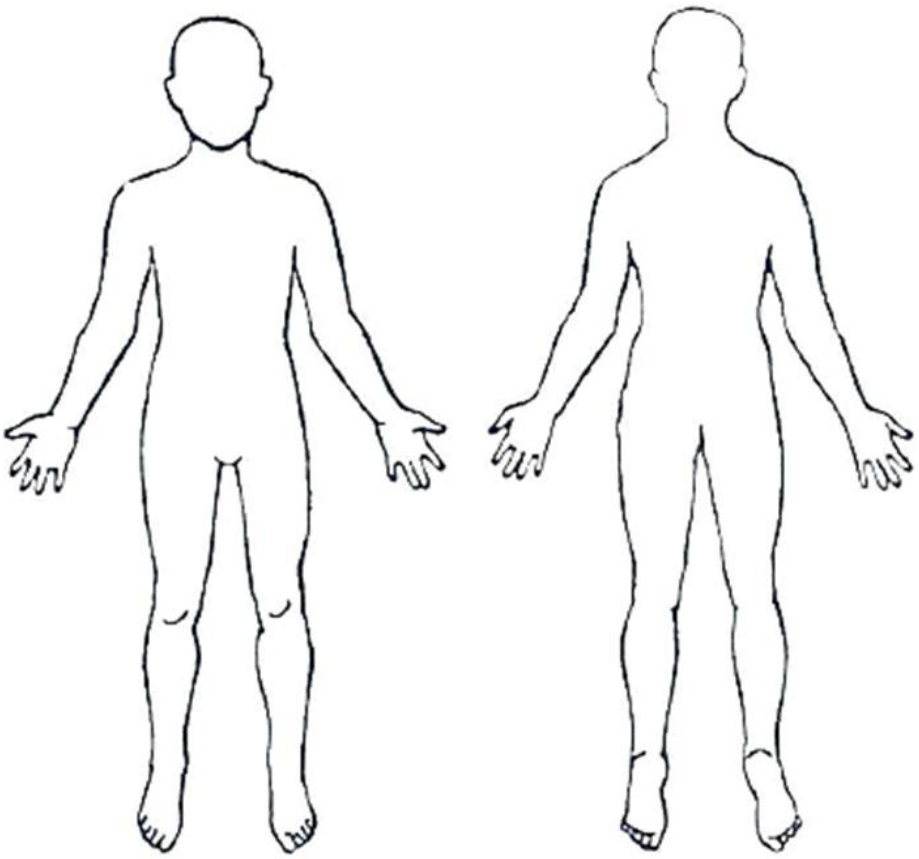
There are four places to give rapid-acting insulin: Back of upper arm, abdomen, outer upper legs, or back upper hip. Do not give this insulin in the abdomen if your child is under the age of 8 or they have very strong stomach muscles.

Draw a CIRCLE on the areas you will give rapid acting insulin injections:

Where can I give long-acting insulin?

It is ideal to give long-acting Insulin in the back upper hip or the abdomen.

Draw a SQUARE on the spots you will give long-acting insulin.



Front Back

Can I give insulin in the same spot all the time?

No. It is important to rotate between where you give the injection to prevent fatty tissue growths (lipohypertrophy) under the skin. These fatty tissue growths cause bumps on the skin and lowers the amount of insulin that your body can absorb.

Injection Technique

How long will a vial last?

It depends on how much insulin your child needs daily. There are 1,000 units in a vial.

How do I identify the dose?

The top of the black plunger is the marker that identifies your dose.

You should see the unit line that you want. Example: If giving 5 units, the top of the black plunger is directly under the line.

What if there are bubbles?

Bubbles prevent your child from getting the full dose of insulin they need. If you see bubbles, push the plunger all the way up to the top of the syringe and try again.

Can I reuse the syringe?

No. Syringes should only be used one time and should be thrown out in a sharps container.

Can I use insulin pens instead?

Syringes are used when very small doses of insulin are needed, such as when a child needs diluted insulin or 0.5u long acting insulin. They will require a syringe injection until their body needs more insulin. In some cases, insurance plans do not pay for insulin pens.

How to Inject with a Syringe

Step 1

Wash your hands

Step 2

Use an alcohol swab to scrub the top of vial

Step 3

Pull air into the syringe and then inject air into the vial

Step 4

Turn vial upside down and pull the number of units of insulin your child needs out of the vial

Step 5

Clean the skin with an alcohol swab

Step 6

Inject insulin by:

- Pinch the skin (wide pinch)
- Insert the needle at 90º angle
- Push the plunger down
- Release pinch (keep the needle in!)
- Count to 3 seconds
- Remove needle from skin

Step 7

Throw away the needle in a sharps container

Injection Technique

Continued

How much insulin is in a pen?

Insulin pens come with 300 units. Most insulin pens are disposable (can be thrown out).

How do I identify the dose?

The notch on the dial shows how many units will be delivered. Some pens deliver in half-units and some use whole units.

This pen is dialed to _____ units

This pen is dialed to _____ units

How big is the needle?

Pen needles are very small. The goal is to insert the needle into the first layer of fat (subcutaneous tissue).

How to inject insulin with Pen

Step 1

Wash your hands

Step 2

Remove the cap and use an alcohol swab to scrub the rubber top of the pen

Step 3

Attach the pen needle and prime 2 units (or until you see 2 drops of insulin)

Step 4

Turn the dial on the pen to find the correct dose of insulin

Step 5

Clean the skin with alcohol swab

Step 6

Inject insulin by:

- Using a 90º angle
- Counting to 8-10 seconds while pressing on the dial so that it returns to zero.

Step 7

Remove needle from the skin

Step 8

Place clear plastic cap on pen needle and unscrew. Throw out the needle in a sharps container. Pen needles are one time use only.

Disposal and Storage

How long is insulin good for?

Insulin is good for 28 days from the date that it is opened. Write the date that it was opened on the label.

Unopened, insulin is good until the expiration date stamped on the package, as long as it is kept refrigerated.

Where do I throw away insulin?

Insulin vials and disposable pens can go straight into the trash.

How do I know if the insulin has gone bad?

If it has clumps, solid white particles or a cloudy appearance, it should not be used. The only insulin that is cloudy is NPH and it does not mean it has gone bad

Remember to always check expiration dates!

Does insulin have to stay in the refrigerator?

Store unopened insulin in the refrigerator. Once the insulin is opened, store it at room temperature. Do not freeze insulin.

What about heat?

Do not expose insulin to direct light, sun or temperatures over 86 degrees. Do not store insulin in a car.

Place insulin in an insulated container or inside of a cooler if you will be outside for long periods of time.

Where do I dispose of sharps, such as needles and lancets?

Always use a sharps container to dispose of sharps. The pharmacy that gives you your diabetes supplies will provide you with one.

Clean LA

Contact 1-888- CLEANLA (1 888 253 2652) or visit www.cleanLA.com to find the nearest location to dispose of your sharps container.

Safe Needle Disposal

www.safeneedledispsal.org/(yourzipcode)

California Recycle

www.calrecycle.ca.gov

Calculating Rapid Acting Insulin Doses

What is a Correction Factor (CF)?

This tells us how much 1 unit of insulin will bring down the blood sugar. **Today, 1 unit of insulin will lower the blood sugar by _____ points. This helps bring the blood sugar back to the target range of _____ - _____.**

When do I give a Correction Dose?

A correction can be given **every 2 hours** if the blood sugar is above target range. Do not use a correction factor before the 2 hours is up because the previous injection of insulin has not finished working.

What is an Insulin to Carbohydrates (Carb) Ratio (ICR)?

This tells us how many grams of carbs **1 unit** of insulin will cover. Always divide the total carbs by the number of grams 1 unit will cover**. Today, 1 unit of insulin will cover ____ grams of carbs.** Remember, this number will change and may be different for different times of the day

When do I use an ICR calculation?

The ICR calculation is used when your child eats carbohydrates.

Are there rounding rules?

If using half units:
0.0 -- 0.24 - Round down to whole unit
0.25 - 0.74 - Round to half unit
0.75 – 0.99 - Round up to the next whole unit

Step 1: Correction

Check blood sugar.

Use the **Correction Chart** to determine how many units are needed.

Practice Example Step 1:

323 blood sugar = _____ units

Step 2: Coverage

Add together grams of carbs to get total grams.

Divide total grams of carbs by the **Insulin to Carb Ratio.**

Practice Example Step 2:

66g of carbs ÷ _____ = _____ units

Step 3: Total Units

Add units from **Step 1** and **Step 2** to find total dose of insulin. Then round to the dose using the rounding rules on the left.

Practice Example Step 3:

_____ units for correction

\+ _____ units for carb coverage

= _____ total units to be given

** After giving insulin, wait the appropriate time before eating. The time to wait is based on blood sugar level before eating.

Examples of Dosing Scale

Remember:

Dosing scales are for rapid acting insulin only.

Example of Correction Scale:

Blood Glucose	Amount of Rapid Acting Insulin	Time to Wait Before Eating	**Bedtime/Overnight Correction**
151-200 mg/dL	**units**	15 minutes	**units**
201-250 mg/dL	**units**	15 minutes	**units**
251-300 mg/dL	**units**	20 minutes	**units**
301-350 mg/dL	**units**	25 minutes	**units**
351-400 mg/dL	**units**	30 minutes	**units**
401-450 mg/dL	**units**	35 minutes	**units**
451-500 mg/dL	**units**	40 minutes	**units**
501-550 mg/dL	**units**	45 minutes	**units**

Example of Carbohydrate Coverage Scale:

Insulin to Carb Ratio (ICR):

1 unit covers _____ grams

(total # of carbs) = ____ units

(ICR)

Example:

(_____) = ____ units

( )

Grams of Carbohydrates	Amount of Rapid Acting Insulin
grams	**units**
grams	**units**
grams	**units**
grams	**units**
grams	**units**

Nutrition Basics

How should my child eat now?

Children with diabetes are HEALTHY and do not need to be on a special diet or eat special foods. A healthy diet for a person with diabetes is a healthy diet for anyone.

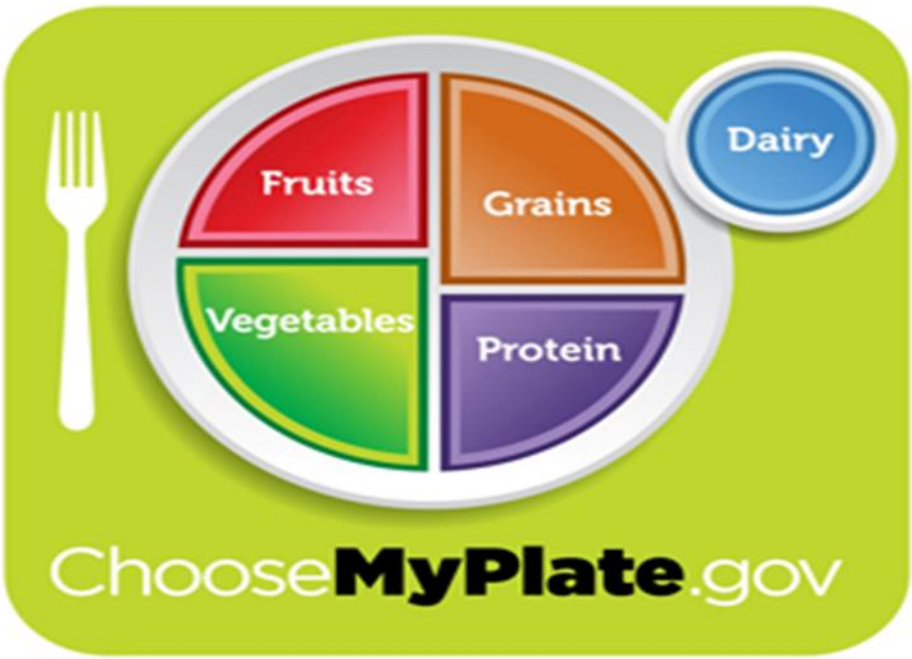
Should my child avoid certain foods? Children need to eat a variety of foods from all food groups to provide them with good nutrition and help them grow. We recommend not giving pure sugar candies and drinks with carbohydrates, especially juice and soda. Milk is ok to give.

What are the food groups?

There are 5 food groups: grains, fruits, vegetables, dairy, and protein. Each of these food groups provides different nutrients including carbohydrates, proteins, fats, vitamins and minerals, water, and fiber.

How should I plan my meals?

Try to aim for ½ your plate filled with non-starchy vegetables, ¼ with grain, and ¼ with lean meat or protein. Focus on adding whole grains to increase fiber intake, and low-fat milk for heart health. See the MyPlate example below.



Introduction to Carbohydrates

What impacts blood sugar the most?
Carbohydrates have the largest impact on blood sugars.

What are carbohydrates?
Carbohydrates are foods that contain natural or added sugars. Carbohydrates turn into sugar in the body. Insulin then moves the sugar from the bloodstream into the cells for energy.

Why do I have to know how many carbohydrates my child is eating?
Carbohydrates will turn into sugar in the body. Carbohydrates must be balanced with insulin to help keep blood sugar levels in the target range.

Are carbohydrates bad?
Carbohydrates are not bad for your child. They are a very important source of energy and nutrition for your growing child.

How do I prevent blood sugars from rising due to food?
To manage blood sugar levels, insulin is given to match the amount of carbohydrate eaten at snacks and meals.

It is important to understand which foods contain carbohydrate and be able to determine how much carbohydrate is in a specific food or meal.

What foods contain carbohydrates?

Fruits

Eat 2-3 servings each day.

Choose whole fruits.

Grains, beans and starchy vegetables

Eat 5-9 servings each day.

Choose whole grains and foods high in fiber.

Milk and yogurt

Eat 3 servings each day.

Choose low-fat or fat-free dairy

Sweets

Enjoy in moderation (not eating too much).

What are some foods with little or no carbohydrates?

Vegetables

Eat at least 3 servings each day.

Eat different-colored vegetables like green, yellow, red and orange for the best nutrition.

Meat, chicken, fish, eggs, nuts and cheese

Eat 5-6 ounces each day.

Choose more lean proteins and low-fat cheese.

Fats

Choose healthy fats.

Limit intake of saturated and trans-fats.

Foods without Carbohydrates

What are carb free snacks?

If food items have a very small amount of carbohydrates, they may be able to be eaten without insulin.

- Chicken, turkey
- Cheese
- Cucumber slices with lemon
- Sugar-free Jell-O
- Beef jerky (check that it is low-carbohydrate)
- Pickles
- Nuts (in small amounts)
- Hard-boiled eggs
- Tuna salad with cucumber slices

What are sugar free beverages?

- Water
- Sparkling water (plain or flavored)
- Naturally flavored waters (Such as Dasani Natural)
- Crystal Light
- ICE
- PowerAde Zero
- Propel Zero
- Mio Liquid Water Enhancer
- Diet soda/Sprite or Coke Zero Sugar

What about sugar free items?

Not all sugar-free beverages or foods are carbohydrate-free. Always check the label. We do not recommend sugar-free products (e.g., cookies, ice cream, chocolates).

What about sweeteners?

The following carbohydrate-free sweeteners can be used:

- Splenda (sucralose)
- Truvia (based from the stevia plant)
- Sweet'N Low (saccharin)
- Equal (aspartame)

Food Labels

How will I know how many carbs are in a meal?
You will need to learn how to look at nutrition facts and how to look up foods without labels.

What should I look for on food labels?
Two areas of focus are:

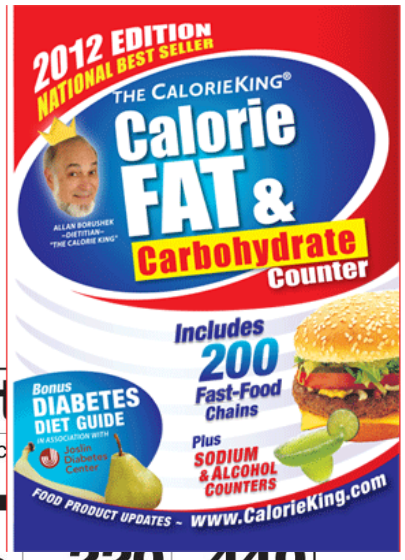
1. Portion size
2. Total grams of carbohydrate

Remember to check how many servings you are actually eating. Many packages contain more than one serving.

What about foods without a label?
Calorie King is a resource that we recommend to many of our families. Again, be careful with your portion size.
There is a website, www.calorieking.com, an app, and a book. In addition to Calorie King, you can also look at individual websites for restaurants to find their nutrition facts.

What about when I don't have my measuring cups?
Sometimes, you have to guess. You can use these as a guide:

- Fist or baseball = 1 cup
- Ice cream scoop = ½ cup
- Handful = 1 ounce of chips
- Thumb-tip = 1 teaspoon
- Computer mouse = ½ cup
- DVD/Blu-Ray = 15 grams of bread, pancake, pita or to



Serving Size: 1 cup

Total Carbohydrate: 35 grams

Nutri

2 servings per c
Serving size

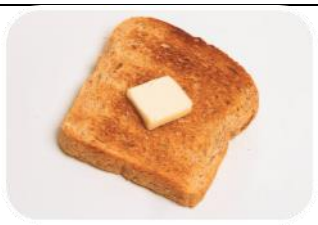
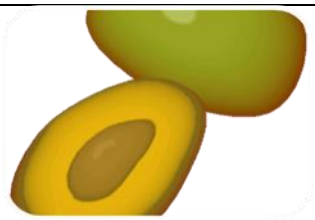
Calories	**220**		**440**	
		% DV*		**% DV***
Total Fat	5g	**6%**	10g	**13%**
Saturated Fat	2g	**10%**	4g	**20%**
Trans Fat	0g		0g	
Cholesterol	15mg	**5%**	30mg	**10%**
Sodium	240mg	**10%**	480mg	**21%**
Total Carb.	35g	**13%**	70g	**25%**
Dietary Fiber	6g	**21%**	12g	**43%**
Total Sugars	7g		14g	
Incl. Added Sugars	4g	**8%**	8g	**16%**
Protein	9g		18g	
Vitamin D	5mcg	25%	10mcg	50%
Calcium	200mg	15%	400mg	30%
Iron	1mg	6%	2mg	10%
Potassium	470mg	10%	940mg	20%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Foods without a Label

1 serving = 15 grams

Some foods are easy to remember because 1 serving has 15 grams of carbohydrates.

			
1 slice of bread	1 waffle	3/4 cup unsweetened cereal	8 oz of milk
			
15 potato chips			
			
1/2 Mango			

Carb Counting Practice

The goal is to calculate and give insulin BEFORE eating. Some exceptions are made for young children or when your child is sick.

Refer to your insulin dose sheet.

Breakfast:

1 cup cooked oatmeal _____ gm carbohydrate
½ banana _____ gm carbohydrate
1 cup 2-percent milk _____ gm carbohydrate

Total grams of carbs _____

Amount of insulin needed _____

Lunch:

2 slices whole wheat bread _____ gm carbohydrate
2 ounces turkey _____ gm carbohydrate
1 slice cheese _____ gm carbohydrate
Mayonnaise _____ gm carbohydrate
9 cracker chips (see food label) _____ gm carbohydrate
1 cup strawberries _____ gm carbohydrate

Total grams of carbs _____

Amount of insulin needed _____

Dinner:

1 cup steamed rice _____ gm carbohydrate
½ cup black beans _____ gm carbohydrate
3 ounces chicken breast _____ gm carbohydrate
1 cup steamed broccoli _____ gm carbohydrate
1 6” corn tortilla _____ gm carbohydrate

Total grams of carbs _____

Amount of insulin needed _____

Nutrition Facts

Serving Size 18 Cracker Chips (29g)
Servings Per Container About 8

Amount Per Serving

Calories 140 Calories from Fat 50

	% Daily Value*
Total Fat 6g	**9%**
Saturated Fat 1.5g	**8%**
Trans Fat 0g	
Polyunsaturated Fat 3g	
Monounsaturated Fat 1g	
Cholesterol less than 5mg	**1%**
Sodium 260mg	**11%**
Total Carbohydrate 19g	**6%**
Dietary Fiber less than 1g	**2%**
Sugars 0g	
Protein 3g	

Vitamin A 2% • Vitamin C 0% • Calcium 2% • Iron 4%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Sat. Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Daily Plan

_____ Breakfast

1) Check blood sugar
2) Calculate dose, 3) give insulin, 4) eat breakfast

_____ Mid-Morning

1) Check blood sugar
2) Calculate dose, 3) give insulin, 4) eat snack (optional)

_____ Lunch

1)Check blood sugar
2) Calculate dose, 3) give insulin, 4) eat lunch

_____ Mid-Afternoon

1) Check blood sugar
2) Calculate dose,3) give insulin, 4) eat snack (optional)

_____ Dinner

1) Check blood sugar
2) Calculate dose, 3) give insulin, 4) eat dinner

_____ Bedtime

1) Give long acting insulin _____
2) Check blood sugar*
3) Calculate bedtime dose, 4) give insulin

_____ Overnight

1) Check blood sugar*
2) Calculate overnight dose, 3) give insulin

To calculate dose:

Correction **___ units**

Carb Coverage **___ units**

Total units = **___ units**

Keep this in mind as you schedule your day:

You may only correct a high blood sugar if it has been more than 2 hours since last insulin injection or food intake.

Long acting insulin must be given at the same time every day.

Do not go more than 4 hours without checking a blood sugar.

*At bedtime and overnight checks, remember to use the bedtime/overnight correction if your child is above target. Give a snack if blood sugar is under 100.

Insulin Calculation Practice

Practice problem 1:

Your child's blood sugar is **323**. They are going to eat **25g** of carbs for breakfast.

Correction **_____ units**

Carb Coverage **+ _____ units**

Total units **= _____ units**

Practice problem 4:

Your child's blood sugar is **189**. They are going to eat **18g** of carbs for a snack. They were corrected for a high blood sugar 1 hour ago.

Correction **_____ units**

Carb Coverage **+ _____ units**

Total units **= _____ units**

Practice problem 2:

Your child's blood sugar is **215** and they are going to eat **82g** of carbs for lunch. They were last given insulin 3 hours ago.

Correction **_____ units**

Carb Coverage **+ _____ units**

Total units **= _____ units**

Practice problem 5:

Your child's blood sugar is **358** and they are going to eat **55g** of carbs for lunch.

Correction **_____ units**

Carb Coverage **+ _____ units**

Total units **= _____ units**

Practice problem 3:

Your child's blood sugar is **115** and they are going to eat **33g** of carbs for dinner.

Correction **_____ units**

Carb Coverage **+ _____ units**

Total units **= _____ units**

Practice problem 6:

Your child's blood sugar is **62** and they are going to eat **33g** of carbs for dinner.

Correction **_____ units**

Carb Coverage **+ _____ units**

Total units **= _____ units**

Appendix

Diabetes in School

When can my child return to school?

Discuss with your school staff, but typically about a week after your child is first diagnosed with diabetes.

How is my child protected at school?

There are laws protecting children with diabetes at public schools, including Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act. The goal of these laws is to make sure that your child is safe at school and is given every opportunity that any other child would have.

What is a 504 Plan?

A 504 Plan is intended to prevent discrimination against people with disabilities, including diabetes. Creating a 504 Plan with the school allows parents to advocate for the safety of their child at school with the support of school staff. Items on a 504 Plan might include allowing unrestricted access to bathrooms, water, and devices.

Do I need to train school staff?

It depends. Public schools are required by law to provide safe care for children at school. Public schools have registered nurses that are qualified to give diabetes care and train other staff in caring for people with diabetes. Private schools are not required by law to provide care to children with diabetes. Private schools might not have nurses on staff and may need assistance in learning how to manage diabetes at school. Therefore, you may need to use outside resources for assistance.

What do I need to bring to school?

- Physician signed school orders
- Testing supplies: strips, lancets, and meter.
- Insulin supplies: including syringes or pen needles, insulin,
- Treatments for low blood sugar: fast acting sugar sources, snacks for post low treatment, and Glucagon kit.
- Ketone strips

Where can I learn more about diabetes safety at schools?

The American Diabetes Association has a department that focuses on keeping kids with diabetes safe at schools. Visit www.diabetes.org and search for “Safe at School”. You can also call 1-800-DIABETES or email AskADA@diabetes.org for more information.

Sick Day and Ketones

What should I do when my child is sick?

Check blood sugars more frequently, every 2 hours. Call the Diabetes Hotline to talk about blood sugar management or ketone management while your child is sick.

What if my child can't eat?

Fluids are most important. Children ages 0-4 will need at least 4 ounces per hour. Children over the age of 4 will need one ounce of fluid per year of age per hour. For example, an 8 yr old will need to drink 8oz every hour while sick.

If the blood sugar is **above** _____mg/dL, use *sugar free* drinks such as water or Crystal Light.

If the blood sugar is **under** _____ mg/dL, use *sugar filled* beverages such as Pedialyte, Gatorade or regular soda.

Should I still give insulin?

Yes, but doses may need to be reduced. Insulin is critically important while your child is sick. Correct high blood sugars every 2 hours if needed and always give basal insulin.

What are Ketones?

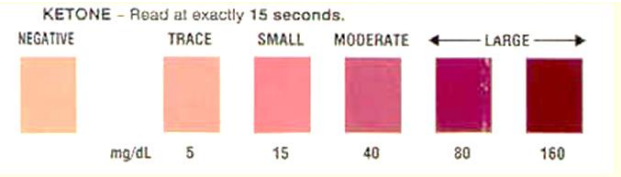
Ketones are produced from the breakdown of fat. When the body cannot use food for energy, such as the case if there is not enough insulin or carbohydrate filled food, the body will break down fat for energy.

When should I check my child for ketones?

Always check ketones when 1) your child is vomiting or nauseous, 2) if the blood sugar is 300 or more on two consecutive checks, or 3) when illness/infection is present.

How do I check for Ketones?

Pass ketone strip through urine or dip in cup. Read result in exactly 15 seconds.



What if there are ketones?

Trace or Small: Have your child Drink water, correct if blood sugar is high. Continue to test blood sugar and check for ketones.

Moderate to Large: Have your child Drink water. Before giving insulin, **call the Diabetes Hotline (323) 361 2311.**

Diabetes and Exercise

Can my child participate in exercise and sports?

Yes! Exercise has many benefits to your child's health, one being that it helps to keep blood sugar levels in the target range.

Will activity impact the blood sugar?

Yes. Exercise typically lowers blood sugars. Strenuous exercise can increase blood sugars temporarily, and then cause low blood sugars up to 24 -36 hours after the exercise.

How often should I test the blood sugar during activity?

Before, every 45-60 minutes during, and after.

What is the ideal range for blood sugar before/during activity?

151-250 is ideal for blood sugar before moderate to intense activity. This range allows for the extra sugar in the blood to be burned off during exercise and helps to prevent low blood sugars.

What if the blood sugar is under 150 before or during exercise?

Have the child eat a ___ gram snack before the activity. This will give them energy to burn off, so do not give them insulin for this snack. If their blood sugar is under 70, treat the low as you usually would do, then give a snack without insulin.

What if the blood sugar is over 250 before or during exercise?

If there are no ketones present, use only half a correction to bring them back into target range before exercise (_____ - _____). For example, if your child's usual correction would be ___ unit(s) for their blood sugar of 275, only give ___unit(s).

Should my child exercise if they are making ketones?

No, your child should not exercise if they are making ketones. We recommend checking ketones before exercise if the child is above 300.

How can I prevent low blood sugars after activity?

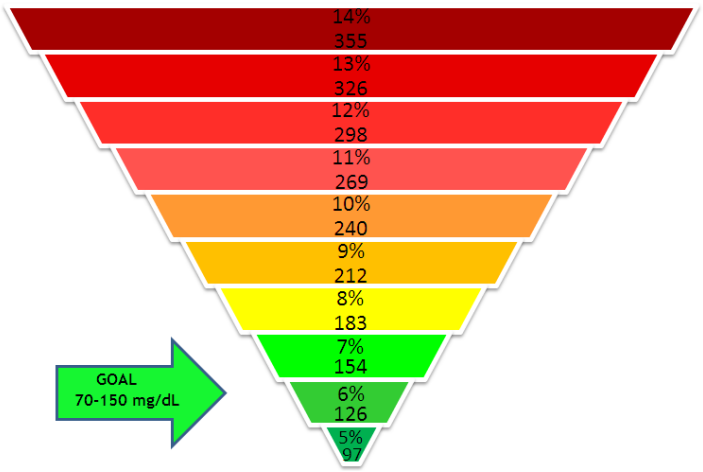
To prevent a low after exercise, we recommend using only half a correction dose of insulin. Intense exercise can cause a temporary spike or jump in blood sugar. The body will use up most of this sugar as it recovers from the exercise. That means only half a dose of correction insulin will be necessary.

Long term health

What is a Hemoglobin A1c?

The Hemoglobin A1c tells us how much sugar is attached to your red blood cells. The amount of sugar on the red blood cells tells us the average blood sugar level over the past 2-3 months.

Example: 7% = 154 mg/dL average.



Why should we check an A1C?

A1C results show the risk for long term complications. Keeping the A1C at your goal lowers risk of long term complications.

What is a safe target A1C?

7.5% or lower is considered safe for those under 18 years of age.

What are diabetes complications?

High blood sugars over a period of time can be damaging to the inside of the body. They can cause damage to organs, such as the heart, kidneys, and eyes.

The more time your child is within a safe range for their blood sugar, the less likely it is that the sugar will do damage to their bodies.

Your diabetes doctor may recommend you visit other specialists to look for other issues, such as going to see an eye doctor.

Remember, it takes years of high blood sugars to to do long term damage to the body.

How can I help prevent diabetes complications?

Keeping records of blood sugars and A1C tests are useful to see patterns and prevent the blood sugars from causing damage to the body. The most important thing you can do is follow the treatment recommendations given by your diabetes team.

Date: _____ A1C: _____ %

Date: _____ A1C: _____ %

Date: _____ A1C: _____ %

Glucagon

What is Glucagon?

Glucagon is a hormone that is normally made in the pancreas. Glucagon raises blood glucose by sending a signal to the liver and muscles (where the body naturally stores glucose) to release glucose.

When would I use Glucagon?

Glucagon must be administered when your child is unable to take a source of sugar by mouth, such as they are not able to swallow, they are unconscious or they are having a seizure. If Glucagon is not available, call 911.

Is this common?

A severe low blood sugar event is rare, but it is important to be prepared in case of an emergency.

Why is the needle bigger?

Glucagon is administered into the muscle. This allows the body to use the medicine faster, which is important in an emergency situation.

How do I prepare Glucagon?

Remove the plastic cap on the vial of powder. **Inject** all the liquid from the pre-filled syringe into the vial.

Swirl the vial until the powder is dissolved into a clear liquid.

Draw up the dose of Glucagon in the same syringe. My child needs _____ mL.

How do I administer Glucagon?

Inject straight into the muscle at a 90-degree angle. The preferred location is the top middle of the thigh.

What should I do after administering Glucagon?

Turn your child on their side after administering the Glucagon.

Will it work right away?

It can take up to 15 minutes for Glucagon to work. After your child is awake, check blood sugar. Use low blood sugar treatments if needed.

If Glucagon is used, call your pharmacy for a refill as soon as possible. Call the hotline once your child is safe to discuss next steps.

Where can I practice?

Download the free App or access the Glucagon website for more details

https://www.lillyglucagon.com/glucagon-app

Check blood sugars

- ☐ Before meals or snacks, before bed, and overnight
- ☐ Write time and blood sugar levels in log

Treat low blood sugars

- ☐ Recognize signs of low blood sugars
- ☐ Give sugar treatment if less than 70mg/dL
- ☐ Recheck blood sugar in 15 minutes, repeat treatment if necessary
- ☐ Call hotline if blood sugar remains under 70mg/dL after 3 treatments

Treat high blood sugars

- ☐ Recognize signs of high blood sugars
- ☐ Give fast acting insulin to correct high blood sugar every 2 hours
- ☐ Call hotline if over 300 two or more times in a row

Identify foods with carbohydrates

- ☐ Count carbohydrates in meals and snacks
- ☐ Cover carbohydrates with fast acting insulin per dosing sheet
- ☐ Write total grams of carbs in log and note the units of insulin given

After today's visit

- ☐ Give _____ units of long acting insulin at _____ every day
- ☐ Remember to call diabetes hotline daily at (323) 361-2311
- ☐ Come to a basics class
- ☐ Come to scheduled appointment
- ☐ Contact pharmacy to check on supplies
- ☐ Call school to inform them of the diagnosis