

Get the answers to your diabetes questions

A complete guide to managing your child's diabetes.





Finding out your child has diabetes isn't easy.

And we're sure you'll have a lot of questions and concerns. That's where Highmark comes in. We'll teach you about blood glucose control, insulin management, and how to help your child make better choices when it comes to diet and exercise. Plus, we'll give you additional resources you can turn to if you need a little extra help.

All right — let's get started.

First, it's important to define what diabetes is.

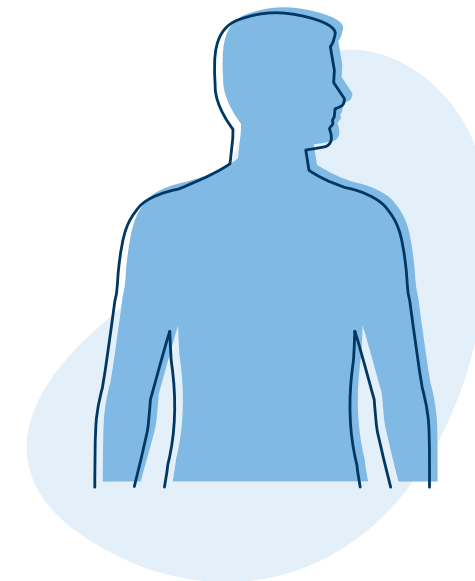
Diabetes is a chronic condition that affects how your body turns food into energy.

Most of the food we eat is broken down into sugar (also called glucose) and released into the bloodstream. When blood sugar goes up, it signals the pancreas to release insulin. Insulin allows blood sugar to enter the body's cells to use as energy.

If your child has diabetes, it means their body either doesn't make enough insulin or can't use the insulin as well as it should. We know it sounds scary, but when you effectively manage your child's diabetes, you can prevent future complications and help your child live a long, healthy life.

Here are five things to keep in mind when developing your child's diabetes treatment plan:

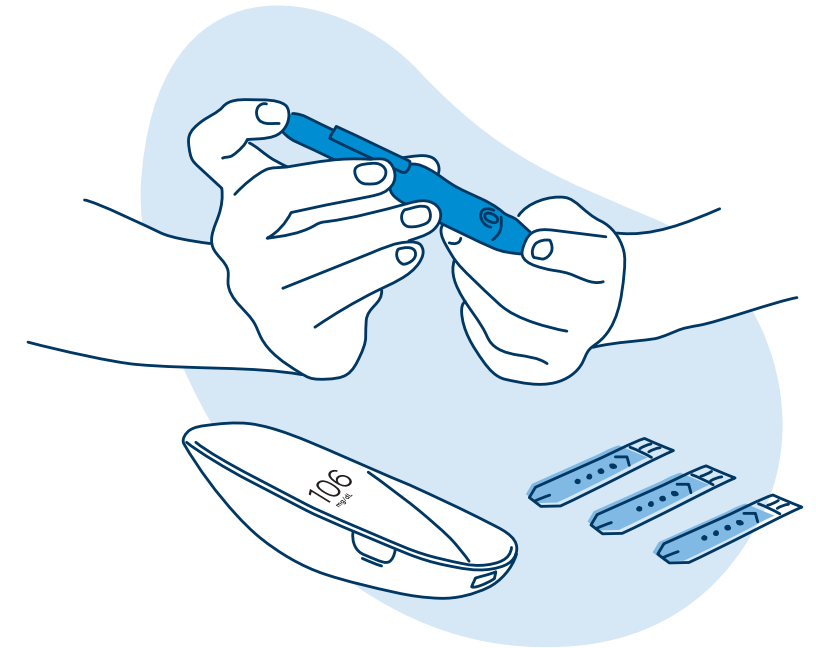
1. Blood glucose control
2. Insulin management
3. Nutrition
4. Exercise
5. Support



The importance of blood sugar testing

Your child's blood sugar levels determine the amount of insulin your child needs. Plan to test your child at specific times during the day and compare your readings with your child's target blood sugar values.

That's where a glucose meter comes in.



What exactly is a glucose meter?

A glucose meter is a small, portable device used to measure how much sugar is in the blood. For most models, you enter a test strip into the device, give your child's finger a little prick using a lancet, and touch the test strip with the blood. Your child's current blood sugar levels are then displayed on the screen.



When to measure your child's blood sugar levels

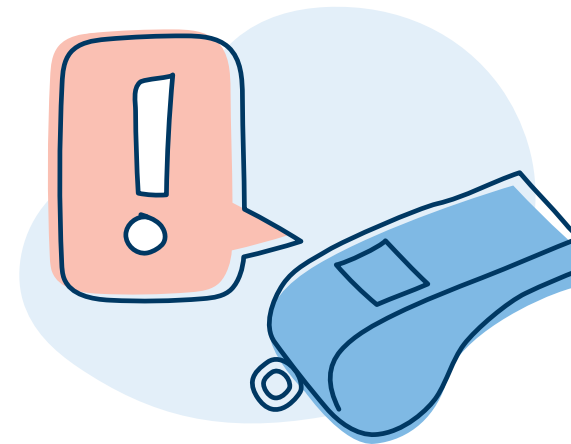
Your child's doctor will give you a plan for testing your child at specific times each day and measuring the readings against their target values. Typically, your child should be tested:

- Every morning before breakfast.
- Prior to exercise.
- Prior to bed.
- Prior to critical tasks such as driving.

If your child is experiencing symptoms of low blood sugar, the doctor may have you check blood levels throughout the night depending on your child's age and circumstances.

Some clarity around blood sugar levels and ketones

When your cells don't get the sugar they need for energy, the body begins to burn fat for energy instead. This produces ketones, which are chemicals created in the liver. When ketones build up in the blood, they make it more acidic. High ketone levels can lead to diabetic ketoacidosis (DKA), which can be life-threatening.



Warning signs for DKA include:

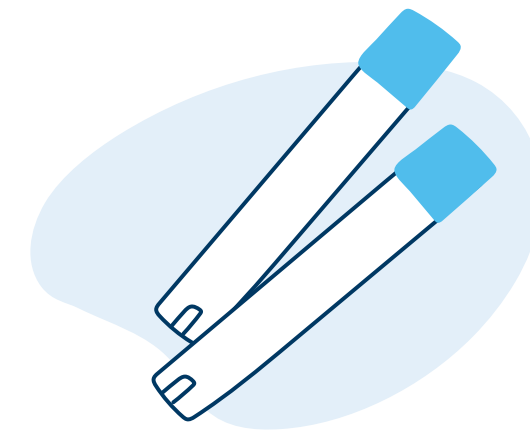
- A blood sugar level over 300
- Nausea
- Abdominal pain
- Vomiting
- Increased thirst
- Confusion
- Fruity smelling breath
- Dry or flushed skin

How to check your child for ketones

To check for ketones, you can purchase Keto-Diastix strips from a diabetic supplier. Here's how to use them:

1. Collect your child's urine in a clean container and dip a strip in the urine.
2. If the strip is positive, use the color code to determine the amount of ketones present. If you see small or trace amounts, it means that ketones are building up.
3. Have your child drink 8 to 16 ounces of water and retest in a few hours.
4. If the ketones are still present, call your child's doctor.

If there are moderate to large amounts of ketones, you should call your child's doctor immediately, as this is a warning sign for DKA.



The difference between hypoglycemia and hyperglycemia

Hypoglycemia

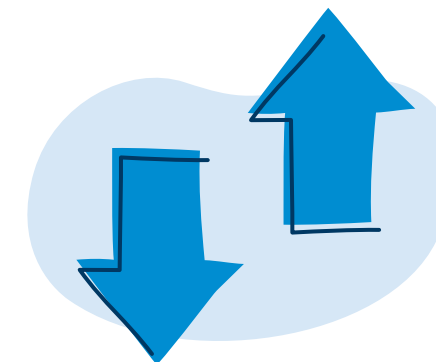
Hypoglycemia occurs when blood sugar levels fall below your child's target values. Symptoms include:

- Shakiness
- Dizziness
- Sweating
- Hunger
- Headache
- Pale skin color
- Sudden moodiness or behavior changes, such as crying for no reason
- Clumsy or jerky movements
- Seizures
- Difficulty paying attention or confusion
- Tingling sensations around the mouth

Hyperglycemia

Hyperglycemia, or high blood sugar, occurs when the body has too many carbohydrates and not enough insulin. Symptoms include:

- Increased thirst
- Headaches
- Difficulty concentrating
- Blurred vision
- Frequent urination
- Fatigue
- Abdominal pain

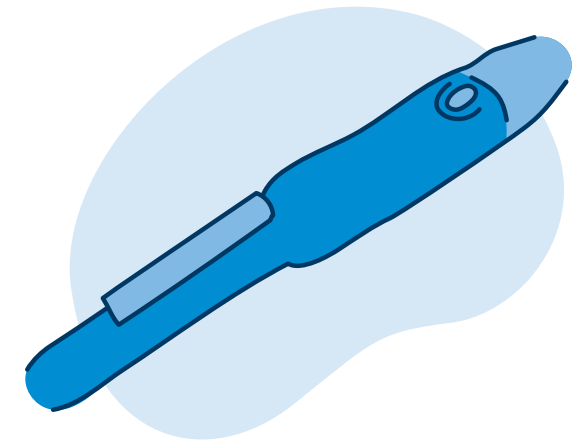


An introduction to insulin

Your child will need to get insulin through multiple daily injections with insulin pens, syringes, or an insulin pump. Each type of insulin varies in its onset, peak, and duration in the body:

- **Onset** – the length of time before insulin reaches the bloodstream and begins lowering blood sugar.
- **Peak time** – when insulin is at maximum strength for lowering blood sugar.
- **Duration** – how long insulin continues to lower blood sugar.

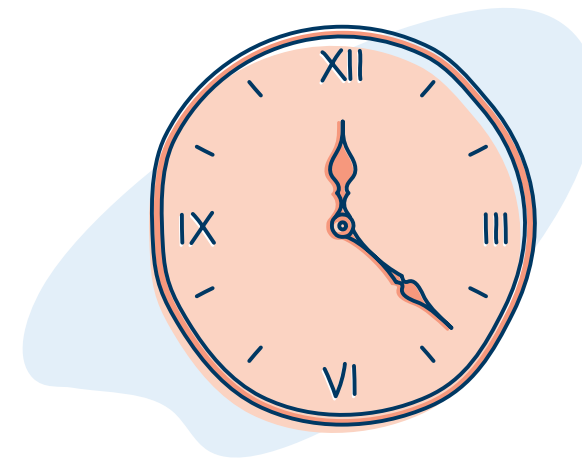
Your child's doctor can find the type of insulin that fits your child's health needs and lifestyle. We'll break down the different types of insulin on the next page.



Insulin types also differ in how they work in the body.

- **Rapid-acting insulin** such as insulin lispro (e.g., Humalog), insulin aspart (e.g., Novolog), or insulin glulisine (e.g., Apidra), begins to work about 5 minutes after injection, peaks in about an hour, and continues to work for 2 to 4 hours.
- **Regular or short-acting insulin** (e.g., human) usually reaches the bloodstream within 30 minutes after injection, peaks in 2 to 3 hours, and is effective for approximately 3 to 6 hours.
- **Intermediate-acting insulin** (e.g., NPH and lente) generally reaches the bloodstream about 2 to 4 hours after injection, peaks 4 to 12 hours later, and is effective for about 12 to 18 hours.
- **Long-acting insulin** (e.g., ultralente) reaches the bloodstream 6 to 10 hours after injection and is usually effective for 20 to 24 hours.

There are also two other long-acting insulin types – glargine (e.g., Lantus) and detemir (e.g., Levemir). They tend to lower blood sugar levels evenly over a 24-hour period with less of a peak time than ultralente.



Understanding the insulin pen

Pens come in two basic types: disposable and reusable.

1. **Disposable pens** – preloaded with insulin and are thrown away after the insulin cartridge is empty or the pen has been used for 28 or 32 days (depending on insulin type).
2. **Reusable pens** – work with insulin cartridges that can be loaded into the pen and then tossed once the insulin is used, leaving the pen ready for the next cartridge.

Each pen only works with certain types of insulin, so keep that in mind as you browse pens.

Rotating the injection site.

When injected in the same area of the body, insulin can cause hardening of the skin and weakening of fatty tissue under the skin, making it thicken over time. Damaged tissue doesn't absorb insulin as easily and at the correct rate, which makes it more difficult to control your child's blood sugar levels.

Insulin injections work fastest when given in the abdomen.

Insulin arrives in the blood a little more slowly from the upper arms, and even more slowly from the thighs and buttocks. It's important that you become familiar with your child's response to injections at the various sites so you can coordinate meal times with injection times.

The basics of insulin storage

It's best to store insulin at room temperature and store extra bottles in the refrigerator.

Here are a couple storage tips:

- Don't store insulin near extreme heat (e.g., in the glove compartment of a car) or extreme cold (e.g., in the freezer).
- Take extra precaution in hot weather. Insulin should be protected from direct sunlight, and in outdoor situations it's a good idea to store insulin in a small, portable cooler pack.

- Check expiration dates to avoid using insulin that has expired.
- Check the insulin for particles or discoloration. If you find any of these, do not use it, and return the unopened bottle to the pharmacy for an exchange or refund.

It's important to always use a new needle for each insulin injection. Needles that have been used more than once can cause unnecessary discomfort and increase the risk of infections.

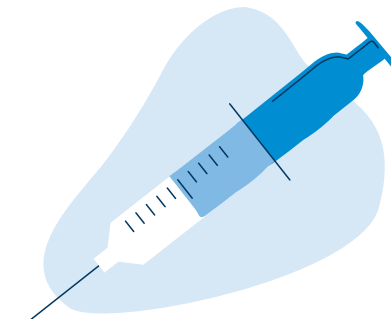
Syringe (sharps) disposal

Sharps is a medical term for devices with sharp points or edges that can puncture or cut skin, such as insulin syringes. If you're using a syringe instead of a pen, here are some steps you need to take to get rid of it.

1. If you don't destroy your needles, recap them.
2. Place your needles in a sharps container. These are generally available through pharmacies, medical supply companies, health care providers, and online.
3. You can also use a heavy-duty plastic household container as an alternative. Do not use a container that will allow the needle to break through.

4. Sharps should never be thrown loosely into the trash or toilet, and they should never be recycled. Sharps that retract after use, or are very small, should be disposed of like all other sharps.

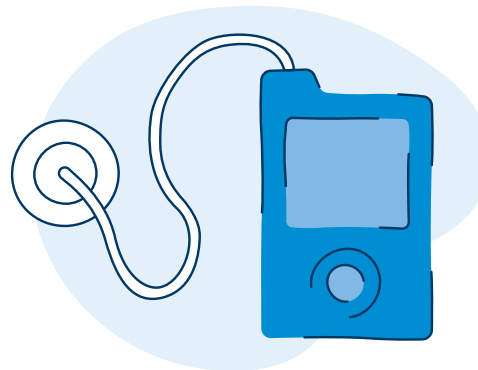
Your community may have rules for disposing of used sharps. Ask your city or county waster authority on what method to use, or visit [safeneedledisposal.org](https://www.safeneedledisposal.org) for more information.



An alternative to insulin injections

Insulin pumps offer convenience and control.

They deliver rapid or short-acting insulin 24 hours a day through a catheter placed under the skin. Using an insulin pump can match your child's insulin to their lifestyle more efficiently. Unlike injections, a pump is more effective at keeping blood sugar levels within the target values.



Insulin pumps deliver three kinds of doses:

1. **Basal rate doses (background insulin)** – mimic typical pancreatic function by delivering consistent small doses of insulin to keep your child's blood sugar levels in range between meals and overnight.
2. **Bolus doses** – single doses of insulin given at one time to cover carbohydrates when your child eats. You can also reprogram the dose to correct for additional carbohydrates if your child eats more than planned.
3. **Correction or supplemental doses** – single doses of insulin used to return high blood sugar levels to the target values. These doses can be given with a meal or when blood sugar is higher than the target values.

The advantages and disadvantages of insulin pumps

Advantages

- Eliminates the need for individual insulin injections.
- Delivers insulin more accurately than injections.
- Improves long-term blood sugar control.
- Fewer large swings in your blood sugar levels.
- Flexibility about when and what to eat.
- Reduces severe low blood sugar episodes.
- Eliminates unpredictable effects of intermediate or long-acting insulin.
- Allows your child to exercise without having to eat large amounts of carbohydrates.
- Improves your child's quality of life.

Disadvantages

- Causes weight gain.
- Can cause diabetic ketoacidosis if there is a problem with the pump or the catheter, and signs of hyperglycemia are unrecognized and untreated.
- Can have a variable cost depending on your health care plan.
- Requires your child to be attached to the pump most of the time.
- Can require extensive training.
- Is not typically prescribed for children whose blood sugar is above 8.5%.
- Requires a commitment from both the parent and the child.

Children of all ages use insulin pumps, and there are several types available. With proper training and support, insulin pumps can help you and your child manage diabetes.

The importance of diabetes screenings*

Screening	Why it's important	When to get it
Hemoglobin A1C/HBA1	Averages your child's blood sugar levels over the past three months to help create a better treatment plan. An A1C goal of <7.5% is recommended across all pediatric age groups.	Initial assessment, then minimum of 2 times per year, ideally every 3 months.
Retinopathy/dilated retinal eye exam	Checks for retinopathy from uncontrolled blood sugar levels that can damage the retina, affect both eyes, and cause vision changes and possible blindness.	Annually after your child is 10 and has diabetes for 3 to 5 years.
Hypertension/blood pressure	Checks for high blood pressure that can cause diabetes complications to the kidneys, heart, and blood vessels.	At each routine diabetes visit with your child's doctor.
Nephropathy/kidney issues	Checks for kidney damage from uncontrolled blood sugar levels that release albumin (protein) in the urine, causing kidney damage that can lead to kidney failure.	Annually in children who've had diabetes for 5 years or longer.
Dyslipidemia/cholesterol	Tests for increased fats or lipids in the blood that can lead to clogged arteries (atherosclerosis), heart disease, and stroke.	Obtain a fasting lipid profile on children >2 years of age soon after diagnosis. If lipids are abnormal, your child will need annual monitoring. If lipids are normal, monitoring is reasonable every 5 years.

Screening	Why it's important	When to get it
Neuropathy/nerves	Prevents uncontrolled blood sugar levels from damaging nerves of the arms and legs, leading to decreased sensation in the hands and feet and unnoticed injuries and infections.	Annually beginning at puberty or at age 10, whichever is earlier, and if your child has had diabetes for 5 years.
Thyroid function	Checks for an imbalance that can cause problems with hormone regulation. Symptoms can range from fatigue and sluggishness to hyperactivity and irritation.	Measure thyroid stimulating hormones (TSH) levels soon after diagnosis of diabetes, after metabolic control has been established. If TSH levels are normal, consider rechecking every 1-2 years or sooner.
Auto immune conditions/ celiac disease	Checks for the presence of auto immune conditions like celiac disease, B12 deficiency, Addison's disease, and autoimmune hepatitis. Screens for celiac disease when a child has gastrointestinal problems, belly pain, diarrhea, failure to gain or lose weight, or has frequent, unexplained hypoglycemia or deterioration in glycemic control.	Consider screening children for celiac disease soon after the diagnosis of diabetes or when symptoms appear.

*The above chart is designed to provide you with general health education and information concerning diabetes screenings. This chart is not a substitute for professional medical advice, diagnosis, or treatment. Always seek the advice of your child's doctor or other qualified health care provider for any medical concerns or questions. Please review your benefit plan for covered benefits.

Teaching your child about a healthy diet

It's important to understand how different foods affect blood sugar and how counting carbohydrates is a crucial part of your child's diabetes care. Work with a registered dietitian to create the eating plan that works best for your child.

Create a colorful plate

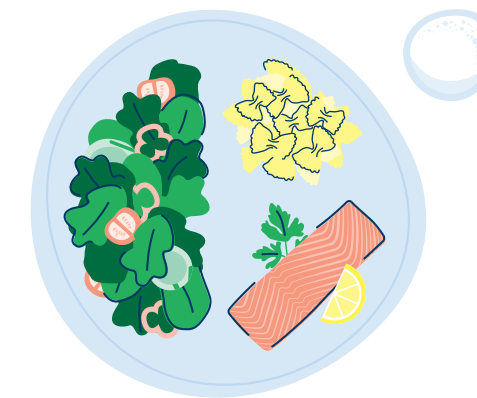
A colorful plate — for both meals and snacks — is one that includes 50% fruits and vegetables, 25% protein, 25% grains or carbohydrates, and a serving of dairy.

Fruits and vegetables – It's important to eat a variety of fruits and vegetables for maximum nutritional value. Try to choose a few different ones each time you shop or take your child with you and let them choose something new to try.

Carbohydrates – The best sources of carbohydrates are found in foods like whole grains, vegetables, fruits, and beans. Skip refined carbohydrates from foods like white bread and rice, pastries, sugared sodas, and other highly processed foods, since these may cause your child to have higher blood sugar readings.

Protein – Having protein in meals and snacks provides your child lasting energy throughout the day, supports growth, and helps with blood sugar control. Choose proteins like beans, fish, nuts, tofu, low-fat cheese, eggs, and low-fat meats.

Dairy – Meals and snacks should also include at least one serving daily of milk, a dairy-free milk alternative, yogurt, or cheese.



Source: choosemyplate.gov

Counting your child's carbohydrates

Foods that contain carbohydrates raise blood sugar, so it's important to learn how to accurately count them. You'll have a better idea of what foods, and their portion sizes, are best after discussing options with your child's doctor or registered dietitian.

One serving equals 15 grams of carbohydrates. There are about 15 grams of carbohydrates in:

- 1 slice of bread (1 oz.) or one six-inch tortilla
- 1/2 cup oatmeal
- 1/3 cup pasta or rice
- 4 to 6 crackers
- 1/2 English muffin or hamburger bun
- 1/2 cup black beans or starchy vegetables
- 1/2 cup ice cream or sherbet
- 1 tbsp. syrup, jam, jelly, sugar, or honey
- 1 cup of soup
- 1/2 cup corn or peas
- 1 cup mixed vegetables
- 1 small, 3-ounce baked potato
- 1/2 cup mashed potatoes
- 1/2 cup sweet potatoes
- 1/2 cup cooked beans
- 1/3 cup hummus
- 1 small apple or orange
- 1/2 of a 4-ounce banana
- 3/4 cup blueberries
- 1 cup cantaloupe
- 17 small grapes
- 1 medium peach or pear
- 3/4 cup pineapple
- 2 small plums
- 2 tbsp. raisins
- 1 cup raspberries
- 1 1/4 cups strawberries
- 1 1/4 cups watermelon
- 2/3 cup plain fat-free yogurt
- 1 1/2 cups raw or cooked broccoli
- 1 1/2 cups raw or cooked carrots
- 3 cups cucumber with peel
- 5 cups chopped cucumber, peeled

Source: tracker.diabetes.org/explore/

Using food labels

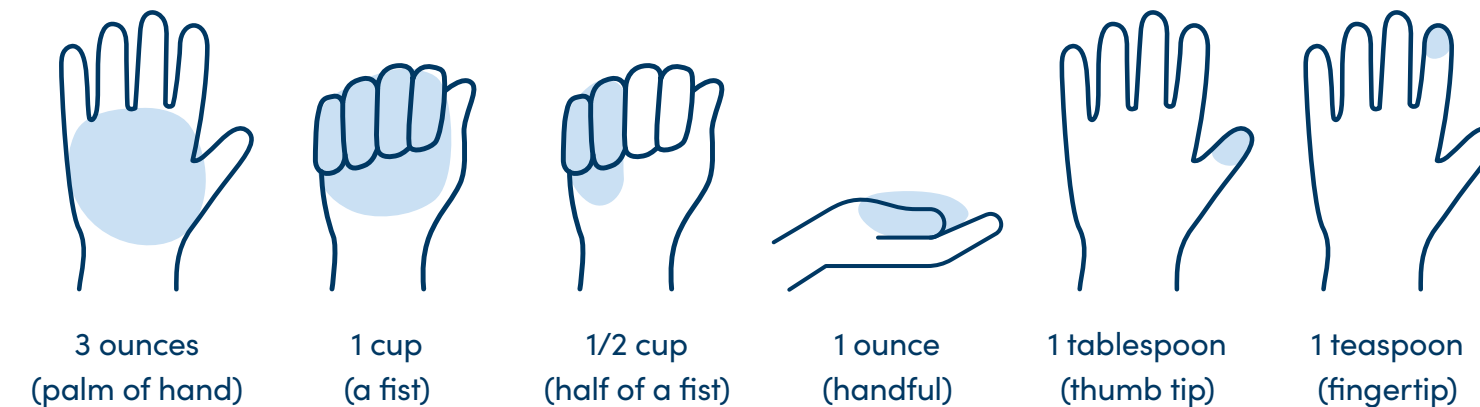
Nutrition Facts	
8 servings per container	
Serving size	2/3 cup (55g)
Amount per serving	
Calories	230
% Daily Value*	
Total Fat 9g	10%
Saturated Fat 1g	5%
<i>Trans Fat</i> 0g	
Cholesterol 0mg	0%
Sodium 160 mg	7%
Total Carbohydrate 37g	13%
Dietary Fiber 4g	14%
Total sugars 12g	
Includes 10g Added Sugars 20%	
Protein 3g	
Vitamin D	10%
Calcium 260 mg	20%
Iron 8mg	45%
Potassium 235mg	6%

* 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.

Food labels allow you to see how many carbohydrates are in the food your child is eating. The two most important lines on a food label are the serving size and the total carbohydrate amount.

- **Serving size** – All the information on the label is about this serving of food. To give your child a larger serving, double or triple the information on the label.
- **Grams of total carbohydrates** – This includes sugar, starch, and fiber. Know the amount of carbohydrates your child can eat and figure out the portion size to match.

You can use this illustration as an easy way to remember portion sizes:



Don't forget about exercise.

Exercise may help stabilize your child's blood sugar levels.

At a minimum, your child should participate in physical activity for about 60 minutes per day. Activity should include high intensity aerobic activity at least 3 days per week, and muscle and bone strengthening activities at least 3 days per week.

Remember to check blood sugar levels often.

Being active can affect blood sugar levels and your child may notice changes during and after physical activity. These changes can occur even hours after exercise. Regular blood sugar testing will help you to understand what being active does to your child's blood sugar levels.



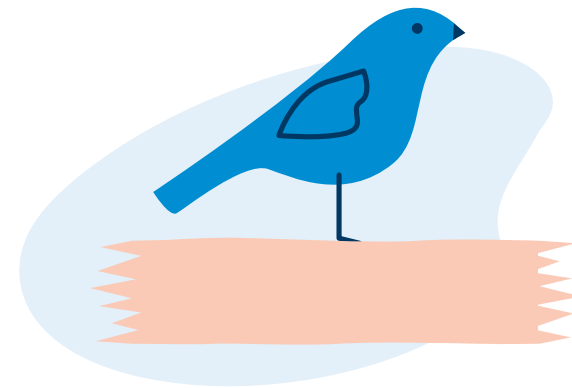
You've got a whole team behind you.

As you develop your child's diabetes treatment plan, you should make routine appointments with these specialists:

- **A behavioral health specialist** – assesses your child's overall emotional health. Your child should be routinely screened for behavioral health conditions such as depression, anxiety, and eating disorders.
- **A pediatric endocrinologist** – gives you target values for your child's blood sugar levels, orders lab work, reviews blood sugar readings, adjusts the treatment plan, and orders new medications.
- **A registered nurse** – teaches day-to-day diabetes care, such as using insulin, keeping track of blood glucose levels, managing sick days, adjusting treatment plans, and offering support.
- **A registered dietitian** – helps with your child's diet, food portions, carbohydrate counting, and meal planning based on your child's weight, lifestyle, medication, and health goals.
- **An eye doctor (either an ophthalmologist or optometrist)** – checks the blood vessels in your child's eyes for diabetic eye disease, which is treatable when caught early.
- **A social worker** – assesses your family for social determinants of health challenges such as lack of transportation to medical appointments, housing instability, or food insecurity. Based on any identified needs, referrals to local community-based programs are provided.

Teaching your child about self-care

Your involvement in your child's diabetes care depends on their age and personality. As your child gets older, it's important to teach self-management skills by allowing your child to complete diabetes care tasks that are appropriate for their age and development. For example, a grade-school child can check a blood sugar level, but a teen can understand how blood sugar levels link to insulin, exercise, and foods, and can act accordingly.



We know letting go of that control can be scary.

And there may even be slip-ups and problems along the way. But it's an important step in helping your child learn how to manage their diabetes on their own.



**We know this is a lot
to take in — but we're
here to help.**

Creating a treatment plan is one of the best things you can do for your child's health — now and in the future.

Remember, there's no one-size-fits-all method for managing diabetes, so it's important that you talk to your child's doctor about any lifestyle changes you're considering as part of the treatment plan. Or you can check out some of the helpful resources on the next page.



Helpful resources for managing your child's diabetes

American Diabetes Association (ADA)

1-800-342-2383
diabetes.org

The ADA has a comprehensive school plan that you can download and complete with your child's diabetes care team. This plan can help school staff understand your child's medical needs and how to manage your child's care in a school setting. Your diabetes care team can also provide personalized instruction to your child's school if needed.

The above constitutes a sampling of organizations that provide information about diabetes. Other organizations may be available in your area. Highmark does not recommend or endorse any one organization.

Juvenile Diabetes Research Foundation

1-800-223-1138
jdrf.org

Emotional support plays a key role in diabetes care. Connect with other families living with diabetes by calling your local Juvenile Diabetes Research Foundation to learn about local support groups and events like diabetes camp, walk-a-thons, and educational seminars.

Notes

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