University of Iowa
Stead Family
Children's Hospital

Type 2 Diabetes Care for Children and Adolescents

University of Iowa
Stead Family Children's Hospital
Pediatric Endocrinology and Diabetes

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The yellow pages in this book will help you quickly find important information.

Contact Us

Pediatric Endocrinology and Diabetes

University of Iowa Stead Family Children's Hospital
Pediatric Specialty Clinic
200 Hawkins Drive
Iowa City, IA 52242

Non-Urgent Calls

Pediatric Specialty Clinic hours: 8 a.m. to 4:30 p.m. Monday through Friday

Pediatric Specialty Clinic phone: 319-356-2229

Option 1: Appointment scheduling
Option 2: Medicine refills
Option 3: Talk to your health care team, such as the pediatric diabetes nurse educator.

Urgent Calls

Daytime: 8 a.m. to 4:30 p.m. Monday through Friday, call 319-356-1616 and ask for the pediatric diabetes nurse educator on-call

After hours, weekends, or holidays, for urgent needs only, call:
319-356-1616 and ask for the pediatric endocrinologist on-call
Toll-free: 1-888-573-KIDS (5437)

Pediatric diabetes nurses' email, for non-urgent needs: peds-diabetes@uiowa.edu

Dietitian: 319-356-0046, for food and carbohydrate questions

Pediatric diabetes fax: 319-356-8170

Emergency calls: 9-1-1

Website: uichildrens.org

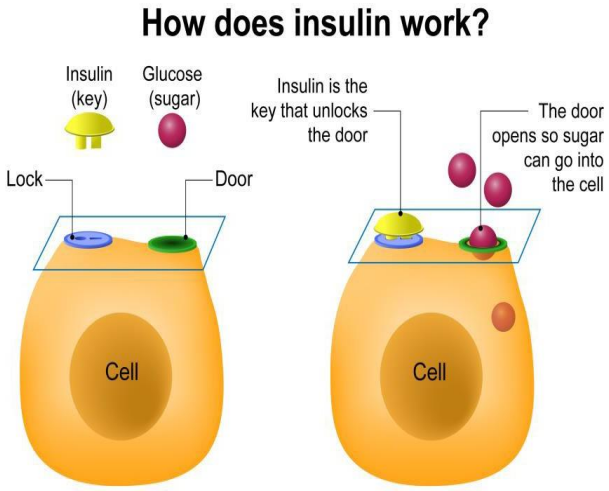
MyChart: uihc.org/mychart

What is Diabetes?

Diabetes is a condition that affects how the body uses sugar. Sugar is the body's main source of fuel. Your body needs sugar for energy. Here is how it should work:

1. You eat food with carbohydrate.
2. Carbohydrate breaks down into sugar and gets into your bloodstream.
3. Your pancreas, inside your belly, makes a hormone called insulin.
4. Insulin helps the sugar get into your body's cells.
5. Your body gets the energy it needs.

Insulin is like a key that opens the doors to the cells of the body. Then sugar can move out of the blood and into the cells.



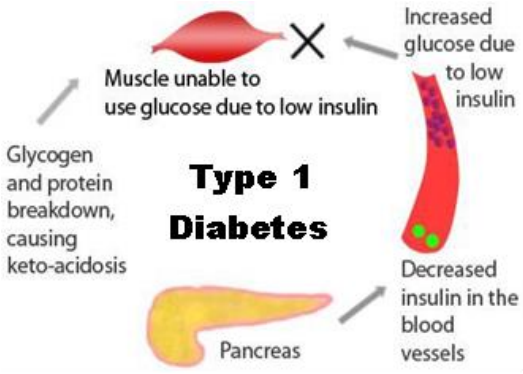
There are two types of diabetes:

- Type 1 diabetes
- Type 2 diabetes

They are different because they make the blood sugar go too high in different ways. The body either can't make insulin or the insulin does not work in the body like it should. Sugar can't get into the cells, so the blood sugar gets too high. Lots of sugar in the blood makes people sick if they don't get treatment.

Type 1 Diabetes

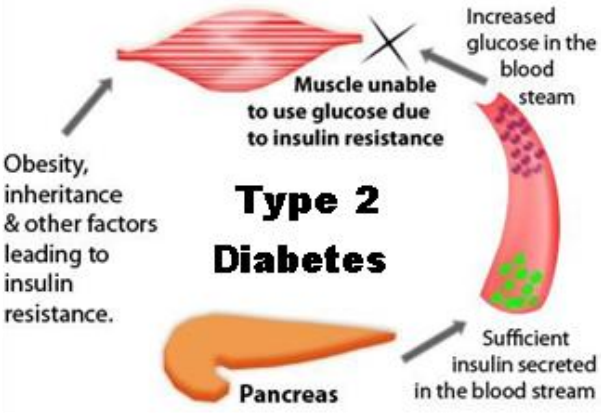
In type 1 diabetes the pancreas **stops making insulin**. There is no insulin to get the sugar from the food you eat into the cells. The sugar stays in the blood and the blood sugar goes too high.



Now, let's learn about type 2 diabetes.

Type 2 Diabetes

In type 2 diabetes the pancreas **still makes insulin,** but it does not work well in the body. The insulin cannot get the sugar from the food you eat into the body cells. The sugar stays in the blood and the blood sugar goes too high. We call this **insulin resistance.**



Kids and adults can get type 2 diabetes. Most are overweight.

What causes type 2 diabetes.?

Your chance of getting type 2 diabetes is higher if:

- You have family with type 2 diabetes.
- You are overweight and not exercising.

How will a person know if they have type 2 diabetes?

The signs of type 2 diabetes are:

- Feeling tired a lot of the time
- Peeing a lot
- Drinking a lot
- Dark skin that looks like dirty skin in areas like arm pits, around the neck, or inside the elbows
- Blurred vision

There are blood tests that will be high if you have diabetes. They are:

- Blood sugar
- Hemoglobin A1c

If your care team finds you have type 2 diabetes, they will teach you and your family how to live with it. Your care team will be doctors, nurses, and dietitians.

You and your family will learn how to:

1. **Eat healthy.** Healthy foods help keep blood sugar closer to normal. They help you grow normally and lose weight if you need to. **Losing weight helps your own insulin work well.**
2. **Exercise each day.** Being active for at least 60 minutes each day helps you use the food you eat. **Exercise helps your own insulin work well.**
3. **Check your blood sugar.** You will need to check your blood sugar on your fingertips several times each day. Your blood sugar level tells your care team if changes are needed to the amount of insulin, medicine, or exercise you do to control your blood sugar.

4. **Take insulin shots or diabetes pills each day.** Insulin and diabetes medicines replace help your own insulin work well.

Your care team wants to help you and your family learn to do all these things. They want you to be healthy and live a long, happy life. **The whole family needs to work together.** Healthy eating and exercise is needed to be successful.

Notes

Healthy Eating

A healthy meal plan is an important part of taking care of your diabetes and staying healthy.

The constant carbohydrate meal plan

The constant carbohydrate meal plan will help keep your blood sugar and weight healthy.

- A constant carbohydrate meal plan is made just for you by a registered dietitian (RD).
    - Amount depends on gender, age, and activity level.
- Count all the carbohydrates you eat each day.
- There are 3 meals and 1 snack each day.
- You eat the same amount of carbohydrates at each meal every day.
- It has all the foods your body needs to be healthy.
- There are everyday foods and sometimes foods.
- You should not eat between meals or snacks. It may raise your blood sugar and cause weight gain.
- Always eat meals and snacks to help your blood sugars stay in a healthy range and to help you feel full.

Your meal plan:

- **Breakfast: _____ grams carbohydrate**
- **Lunch: _____ grams carbohydrate**
- **Afternoon snack: _____ grams carbohydrate**
- **Dinner: _____ grams carbohydrate**

Tools to help with carbohydrate counting

Here are a few tools that can help with carbohydrate counting.

- Nutrition labels

- Measuring cups, measuring spoons, and digital food scales

- Restaurant nutrition information

- Smart phone apps

Foods with carbohydrates

Carbohydrates are the main fuel for the body and give you energy. There are 2 kinds of carbohydrates:

1. **Simple carbohydrates**
    - Easy to digest
    - Raise blood sugar very fast
2. **Complex carbohydrates**
    - Have **fiber** and take longer to digest
    - Raise blood sugar slowly
    - Help keep your blood sugar in a healthy range

Fiber is found in plant foods:

- Fruits
- Legumes
- Nuts
- Seeds
- Vegetables
- Whole grains

There are 5 food groups with carbohydrates:

- Fruit
- Milk and yogurt
- Non-starchy vegetables
- Starches (grains, starchy vegetables, beans, legumes)
- Sweets and condiments

Starches (15 grams of carbohydrate)

Choose whole grains and starches that are less processed. They are a main source of energy.

- 1/2 cup cooked unsweetened oatmeal
- 3/4 cup unsweetened cereal
- 1/4 cup granola
- 1 slice of bread
- 1/2 hamburger or hot dog bun
- 1/4 bagel
- 1/3 cup cooked pasta or rice
- 1/3 cup baked beans
- 1/2 cup refried beans
- 1/2 cup potatoes, corn, or peas
- 4-inch cob of corn
- 3 ounces baked potato
- 2 ounces French fries
- 1/2 cup pasta sauce
- 3 cups popped popcorn
- 13 chips (1 small bag)
- 6 saltine crackers

Fruits (15 grams of carbohydrate)

Choose fresh or frozen fruits most often. They help with healthy growth.

- 15 small grapes
- 4-inch banana
- 4-ounce apple or pear
- 6-ounce orange
- 1 cup diced melon
- 1 cup berries
- 1/2 cup canned fruit (packed in light syrup or juice)
- 2 tablespoons raisins
- 1/2 cup fruit juice (fresh squeezed or store bought)

Milk and milk substitutes (12 grams of carbohydrate)

Milk and milk substitutes are important for bone health.

- 1 cup milk (non-fat, low fat, whole)
- 1 cup plain rice milk
- 1 and 1/2 cups plain almond milk
- 1 and 1/3 cups plain soy milk
- 2/3 cup plain yogurt
- 2/3 cup plain Greek yogurt

Non-starchy vegetables

(5 grams of carbohydrate for 1 cup raw or 1/2 cup cooked)

Non-starchy vegetables have fiber to keep you full and are low calorie and low carb.

- Artichoke
- Asparagus
- Baby corn
- Beets
- Broccoli
- Brussels sprouts
- Cabbage
- Carrots
- Cauliflower
- Celery
- Collard greens
- Cucumber
- Daikon
- Eggplant
- Green beans
- Green onion/scallions
- Jicama
- Kale (cooked)
- Kohlrabi
- Leeks
- Mushrooms
- Onions
- Pea pods
- Peppers (sweet and spicy)
- Radishes
- Spinach (cooked)
- Sugar snap peas
- Squash (summer, yellow, zucchini)
- Tomato
- Canned tomatoes (no sugar added)
- Water chestnuts

You do not have to measure or count leafy greens, such as:

- Iceberg lettuce
- Romaine lettuce
- Uncooked kale
- Uncooked spinach

Condiments (grams of carbohydrate vary)

Do not forget to count carbohydrates in dips, sauces, and dressings.

- 3 tablespoons barbecue sauce 15 g
- 2 tablespoons chocolate syrup 15 g
- 1 cup canned gravy 15 g
- 2 tablespoons ketchup 10 g
- 1 tablespoon pancake syrup 15 g
- 2 tablespoons ranch dressing 4 g

Sweets (grams of carbohydrate vary)

Sweets can fit into a healthy meal plan but should be eaten in small portions.

Do not eat sweets more than 1 time a week or on special occasions.

- 1 1/4-inch brownie, unfrosted 15 g
- 2-ounce angel food cake, unfrosted 30 g
- 2-ounce yellow cake, frosted 30 g
- 1 3/4-ounce frosted cupcake 30 g
- 4-ounce muffin 60 g
- 1/2 cup (3 1/2 ounce) fruit cobbler 45 g
- 1/6 of 8-inch fruit pie with two crusts 45 g
- 1/8 of 8-inch pumpkin or custard pie 22 g
- 1 1/2-ounce plain cake doughnut 22 g
- 2 (1-ounce) doughnut holes 15 g
- 3 3/4-inch (2-ounce) plain yeast doughnut 30 g
- Two 2 1/4-inch chocolate chip cookies 15 g
- One 6-inch (3-ounce) chocolate chip cookie 60 g
- 2 sandwich cookies with cream filling 15 g
- 5 vanilla wafers 15 g
- 1/2 cup pudding (made with low fat milk) 30 g
- 1-ounce milk chocolate or dark chocolate candy 15 g
- 5 chocolate Hershey Kisses 15 g
- 3 pieces of hard candy 15 g
- Popsicle (with sugar not sugar-free) 8 g
- 1/2 cup vanilla ice cream 15 g
- 1/3 cup frozen yogurt 15 g

Foods to limit

It is important to know which foods to limit or avoid to keep your blood sugar in a healthy range.

The usual blood sugar target ranges for children of all ages are:

- Before meals: 80 to 130
- 1 to 2 hours after meals: less than 180

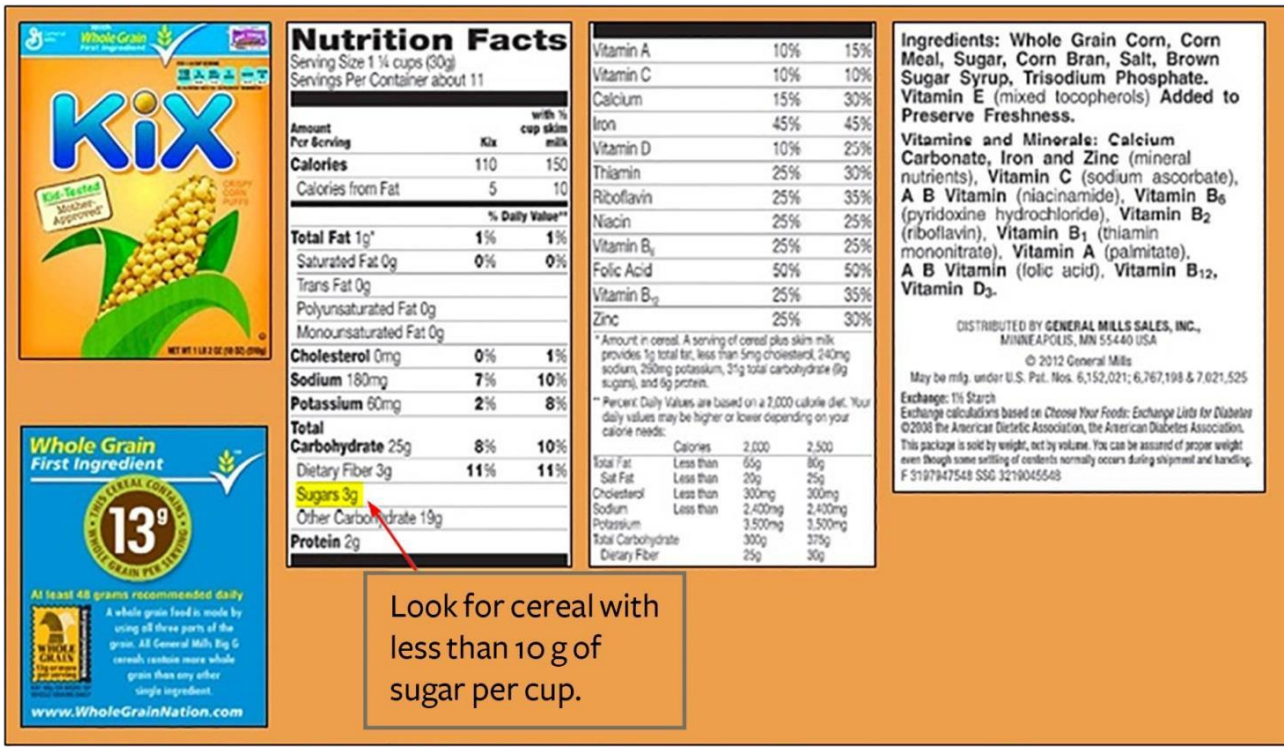
Sugar and processed carbohydrates make blood sugar rise and fall quickly.

Do not eat or drink:

- Foods high in sugar and processed carbohydrate, such as:
  - Chips
  - Crackers
  - Candy
  - Cookies
  - Ice cream
  - Cakes/cupcakes
  - Pies
- Drinks sweetened with sugar, such as:
  - Energy drinks
  - Flavored milk
  - Eggnog
  - Fruit juice
  - Regular soda
  - Sports drinks
  - Lemonade
  - Sweet tea
- Breakfast foods with a lot of sugar and simple carbohydrate, such as:
  - Breakfast pastries
  - Doughnuts
  - Pop-Tarts
  - Toaster pastries

Instead try:

- Fruit for a sweet treat
- Raw veggies and dip for a crunchy treat
- Drinks sweetened with artificial sweeteners, such as:
  - Crystal Light®
  - MiO®
  - Diet soda
  - Powerade Zero®
- **Water and milk are always the healthiest choices.**
- Breakfast cereal and flavored oatmeal with:
  - Less than 10 grams of sugar per serving
  - 3 or more grams of fiber per serving



Kix® cereal nutritional information courtesy of General Mills

Protein

Choose low fat proteins with less than 5 grams of fat per 1 ounce serving.
Protein foods are:

- Meat
- Poultry
- Fish
- Cheese
- Eggs
- Plant-based proteins (beans, soy, nuts, and seeds)

Plant-based proteins

Read the nutrition label on plant-based proteins. **They are not carb-free.**

- 2 tablespoons nuts 3 g
- 1 tablespoon peanut butter 3 g
- 1 cup shelled edamame 15 g
- 1/2 cup hummus 18 g
- 1/2 cup refried beans 15 g
- 1/3 cup baked beans 15 g
- 1/2 cup lentils 15 g
- 1/2 cup beans 15 g
    - Beans: black, garbanzo, kidney, lima, navy, pinto, white

Proteins with breading

Read the nutrition label on proteins with breading. **They are not carb-free.**

- Chicken fried steak
- Chicken nuggets
- Fried fish

Healthy cooking tips for proteins are:

- Trim fat off meat before cooking.
- Drain fat off meat after cooking.
- Grill and bake instead of deep or pan fry.
- Use non-stick cooking spray instead of butter.

Fat

You need fat for healthy growth. Some fats we should eat and drink more often and some less often.

Eat and drink monounsaturated and polyunsaturated (Omega-3 and Omega-6 fatty acids) fats each day, such as:

- Avocado
- Almond milk
- Fatty fish (salmon, tuna, mackerel, herring, trout, sardines)
- Margarine
- Natural peanut butter
- Nuts
- Olives
- Olive oil
- Seeds

Limit the saturated fats you eat and drink:

- Butter
- Cheese
- Cream
- Cream cheese
- Fatty beef and pork
- Lard
- Skin on chicken and turkey
- Whole milk

Do not eat and drink trans fats. **There are 2 types of trans fats:**

- **Natural:** dairy and meat products
- **Artificial:** processed foods

Processed foods are the main source of trans fats. Look for trans fats in:

- Baked goods such as cakes, pie crusts, biscuits, or cookies
- Buttered popcorn, chips, and crackers
- Fried fast foods, such as doughnuts, French fries, fried chicken, or fried fish
- Frosting
- Frozen pizza
- Stick margarines, shortening, and other spreads

Look for the words "partially hydrogenated oils" in the ingredients list.

Foods may be labeled with 0 g trans-fat if they have less than 0.5 mg per serving. Often you may eat more than one serving of the food and be eat several grams of trans fat.

Why limit saturated fats and avoid trans fats?

- They make bad (LDL) cholesterol go up and good (HDL) cholesterol go down.
- Eating too much makes your risk of heart disease and stroke goes up.

Sodium (salt)

Salt is found in most processed foods to make them taste better and help them last longer. Most people eat too much salt. Too much makes your risk of high blood pressure, heart disease, and stroke go up.

Do not eat more than 2300 milligrams (mg) each day. Limit your salt intake by:

- Eating less processed foods
- Not eating out at restaurants
- Eating fresh or frozen vegetables over canned vegetables
- Looking for "low sodium" or "no added salt" on the label of canned foods
- Draining and rinsing canned beans and vegetables before heating or adding them to a recipe
- Buying spices without salt, such as garlic powder instead of garlic salt
- Getting rid of the saltshaker at home and season with herbs and spices
- Asking for your food to not be salted at restaurants

Foods high in salt are:

- Bread and baked goods
- Breakfast cereals
- Canned soups
- Canned vegetables
- Chips, crackers, and pretzels
- Frozen pizza, breakfast sandwiches, and microwavable meals
- Lunchmeat, hotdogs, and other processed proteins

Portion sizes

Knowing portion sizes with your hand or plate can help with counting carbohydrate if you do not have measuring cups, measuring spoons, or a scale.

This much	is the same as
	**3 ounces** 1 serving of meat, chicken, turkey, or fish
	**1 cup** 1 serving of • cooked vegetables • salads • casseroles or stews, such as chili with beans • milk
	**½ cup** 1 serving of • fruit or fruit juice • starchy vegetables, such as potatoes or corn • pinto beans and other dried beans • rice or noodles • cereal
	**1 ounce** 1 serving of • snack food • cheese (1 slice)
	**1 tablespoon** 1 serving of • salad dressing • cream cheese
	**1 teaspoon** 1 serving of • margarine or butter • oil • mayonnaise

niddk.nih.gov/healthinformation/diabetes/diabetes-diet-eating

Meal planning

Planning can help you to make healthier choices for your meals and snacks.

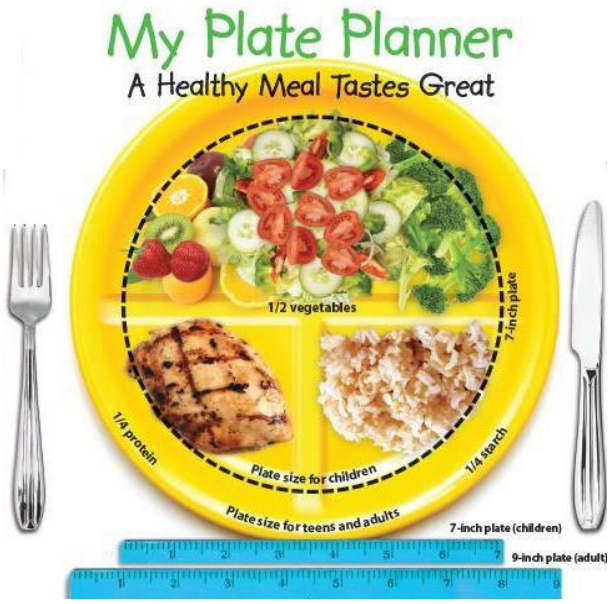
Tips:

- Make a list of meals for the week.
    - Make sure to include all the different food groups.
    - Have fruit for dessert instead of something with added sugars.
- Make a grocery list based on these meals and what you already have.
- Do not go grocery shopping on an empty stomach.
- Shop the outside of the store and limit what you buy in the aisles.
    - Look for canned vegetables with "no added salt."
    - Look for canned fruit with "no sugar added" or "in their own juice."
    - Do not buy chips, sweets, and sweetened drinks.
- When you get home, clean and cut up fruits and vegetables for easy snacks.
- Store healthy snacks at eye level in the pantry and fridge.

Healthy mealtime

Tips for healthy and successful mealtime:

- Eat dinner together as a family at the dinner table.
- Turn off distractions, such as TV, cell phone, tablet.
- Use 10 inch instead of 12-inch plates to help with portion control.
- Do not eat second helpings.
- Take a sip of your drink between every few bites to slow down your eating.
- Limit meals to 30 minutes.



Sample meal plan

Below is a healthy meal plan for a child with type 2 diabetes. It has:

- 55 to 60 grams of carbohydrate for meals (breakfast, lunch, dinner)
- 15 grams carbohydrate for afternoon snack

Breakfast

- Egg sandwich (whole wheat English muffin and 1 egg)
- 1/2 banana
- 1 cup low fat milk

Lunch

- Turkey sandwich (2 slices whole wheat bread, 3 ounces of turkey, 1 tablespoon mustard)
- 1 cup baby carrots with 1 tablespoon ranch
- 10 small grapes
- 1 cup low fat milk

Afternoon snack

- 6 whole wheat crackers
- 1-ounce string cheese

Dinner

- 3ounces chicken breast
- 1 cup whole wheat pasta
- 1/2 cup green beans
- 1 cup low fat milk

Snack ideas

Choose snacks that pair 10 to 15 grams of carbohydrate with protein and healthy fats to help your blood sugars stay near target range

10 grams of carbohydrate or less

- 1 cup sugar snap peas with 7 cheese cubes
- 1/4 cup shelled pistachios
- 1 cup non-starchy vegetables dipped in 2 ounces guacamole ("mini cup")
- 10 turkey pepperoni rounds with 1 clementine
- 1 oz plain or flavored almonds, such as cocoa roasted or smoked
- KIND® bar minis or "thins"
- Greek yogurt with 10 grams of carbohydrate or less
- 2 tablespoons crispy roasted chickpeas
- Flavored tuna pouch paired with 7 Wheat Thins® or Triscuit Thins®
- 1 small, sliced cucumber dipped in 3 tablespoons hummus
- 2 cups air-popped popcorn with 1 hard-boiled egg
- 1 serving baked cheese ("Moon Cheese®" or "Whisps®") with 1/3 cup grapes
- 1/4 cup strawberries dipped in 2 tablespoons almond butter
- 1/3 medium pear with 1 Babybel® cheese
- Laughing Cow® breadstick and cheese dippers
- 2 tablespoons pumpkin "pepita" seeds with 4 oz no-sugar-added fruit cup
- 1/2 cup cottage cheese with 1/4 cup berries
- 2/3 cup shelled edamame
- 1 slice toasted low-carbohydrate bread topped with 1 sliced hardboiled egg
- 3 turkey roll-ups (wrap deli turkey around a pickle, tomato slice, or avocado slice)

15 grams of carbohydrate or less

- Protein-containing granola bar with 15 grams of carbohydrate or less
- 1 1/2 tablespoons peanut butter with dippers (1/2 sliced apple or 1 cup carrots)
- Kids "Perfect Bar®" or RxBar Kids®
- 1 package sour raisins with 1 string cheese stick
- 1 chocolate flavored rice cake spread with 1 tablespoon peanut butter
- 7 bean tortilla chips with 2 tablespoons salsa or guacamole
- Outshine Simply Yogurt® bars (freezer section)
- 6-inch corn tortilla rolled with 1 oz deli meat and 1 tablespoon salsa
- 1/4 cup Oatmeal Squares® cereal with 2 tablespoons dry roasted nuts

Notes

Counting carbohydrates in a recipe

Some recipes may not have nutrition information. Here is how to figure it out.

1. Use a food label, the internet, or a book to look up the carbohydrate in each ingredient in the recipe. The amount needed in the recipe may be different than the serving size on the label.
2. Add all the carbohydrate grams together for the recipe to get the total amount of carbohydrates for the whole recipe.
3. Make the recipe.
4. Divide into equal portions by cutting, or using measuring cups or a scale.
5. Divide the total grams of carbohydrates (from step 2) by the number of portions you just made (in step 4).
    - This number is the amount of carbohydrates in each serving.
6. You do not need to do the math again the next time you make the recipe. Write down these 3 things:
    - The total number of carbohydrates in the whole recipe.
    - The number and size of the portions you made.
    - The carbohydrate in each serving.

Example: Turkey Chili

1-pound 93 percent fat free ground turkey	_____
1 yellow onion, chopped	_____
1 (28-ounce) can no sodium added diced tomatoes	_____
1 (16-ounce) can no sodium added kidney beans	_____
1 tablespoon garlic, chopped	_____
2 tablespoons chili powder	_____
1/2 teaspoon paprika	_____
1/2 teaspoon dried oregano	_____
1/2 teaspoon ground cayenne pepper	_____
1/2 teaspoon cumin	_____
1/2 teaspoon ground black pepper	_____
2 cups water	_____
Total carbohydrates	_____
Number of portions and portion size	_____
Carbohydrates per serving	_____

Unique situations

Eating at a restaurant

Eating out is one way we spend time with family and friends The food is often unhealthy and larger portion sizes than we would have at home though. Here are ways to make eating out healthier:

- Look up the nutrition information and menu before you go out to eat.
- Make a plan for what you would like to eat and how it will fit in your meal plan.
- Think about:
    - Sharing a meal or side dish so it may fit in your plan instead of not having any at all.
    - Asking for a lunch or kid size for a smaller portion.
    - Asking for a to-go container when you get your meal and putting half the meal in the to-go container.
    - Asking for sauces on the side and no added salt.
    - Skipping appetizers, bread, and/or tortilla chips on the table.
- Do not skip meals to have more carbohydrate at a later meal. Eating the same amount of carbohydrate at each meal is important to keep your blood sugars near target range.

Eating at parties or potlucks

Many celebrations involve parties and potlucks where you have no idea what is in the food. There may be times when there is no nutrition information, and you have no way to know portion sizes.

- Do the best you can and use what you already know.
- Look for fresh fruits and vegetables, grilled or baked proteins without cheese or sauces, and whole grains.

Eating school breakfast/lunch

Making a plan for school lunch is an important part of your school diabetes care plan.

- Call your school if carbohydrate information is not already on the menu.
- Any school getting government assistance must give nutritional information on the foods they serve.
- Please let your diabetes care team know if you have a hard time getting nutrition information. They can help.
- Look at the menu as a family to make sure you get all the food groups.
- Take home desserts from class parties.
- Choose 1% or skim (fat free) milk. Drink white milk more than flavored.

Sugar alternatives

Foods and drinks that use artificial sweeteners give you more choices when eating or drinking something sweet.

The artificial sweeteners list has been tested and approved by the U.S. Food and Drug Administration (FDA) as "generally regarded as safe" (GRAS).
GRAS means experts have agreed that it is safe for use in moderation.

Many foods with artificial sweeteners may still have carbohydrate. Always check the label.

Sugar alcohols

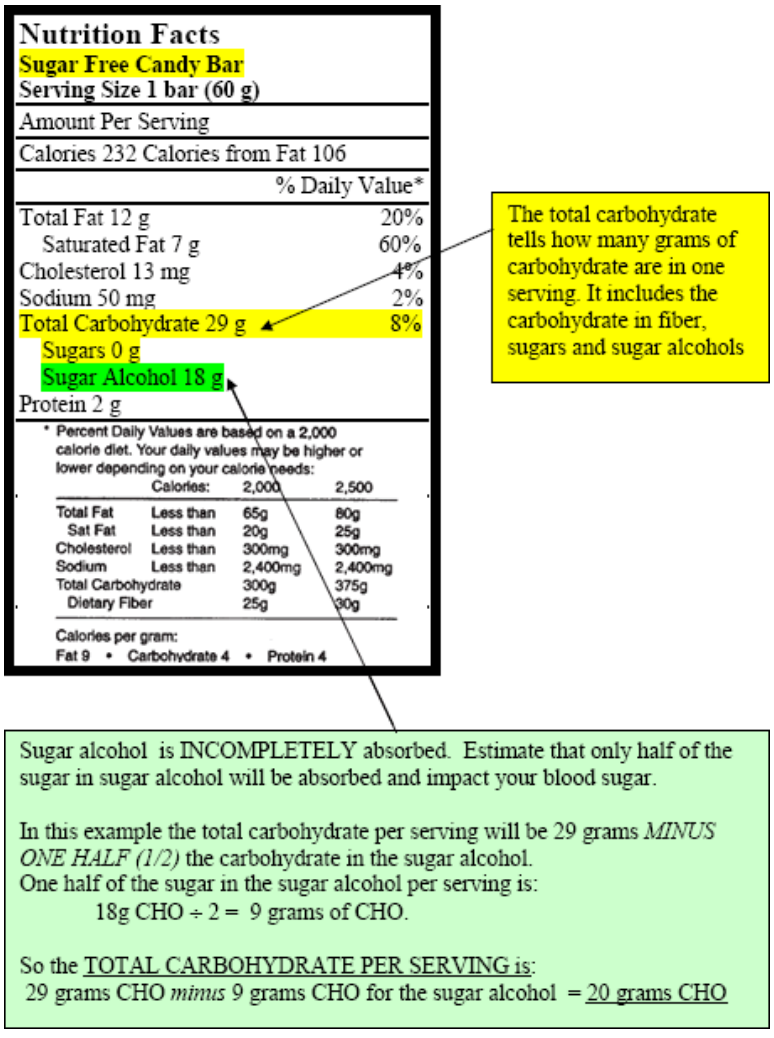
Some sugar alcohols are:

- Erythritol
- Mannitol
- Sorbitol
- Xylitol

Sugar alcohols:

- Have fewer calories and less of an effect on blood sugar than sugar
- Are not completely carbohydrate-free
- May cause gas, cramping, and diarrhea in some people

Counting carbohydrates with sugar alcohols:



Non-nutritive sweeteners

Carbohydrate and calorie-free alternatives to sugar are:

- Acesulfame potassium (AKA-Acesulfame K)
- Aspartame
- Saccharin
- Stevia
- Sucralose
- Neotame

Be aware of products that may have additional carbohydrates or sugar alcohols. Always read the nutrition label and count any carbohydrate listed.

- Splenda® brown sugar blend (sugar and molasses)
- Splenda® sugar blend (sugar)
- Stevia® in the raw (dextrose)
- Truvia® baking blend (erythritol and sugar)
- Truvia®/PureVia® (erythritol)

Sweetener name	Brand names found in stores
Acesulfame potassium	Sunett®, Sweet One®
Aspartame	NutraSweet®, Equal®
Neotame	N/A
Saccharin	Sweet 'N Low®, Sweet Twin®, Sugar Twin®
Sucralose	Splenda®
Stevia/ Rebaudioside A	A Sweet Leaf®, Sun Crystals®, Stevia®, Truvia®, PureVia®

Resources for Healthy Eating and Meal Planning

Books

- Calorie and Carbohydrates by Barbra Krouse
- Stop! Stop! No Sugar On Top by Pradnya Patet, Debra Hull, and Arijeet Sensharma
- What Do I Eat Now?: A Step-by Step Guide to Eating Right with Type 2 Diabetes by Patti Geil and Tami Ross

Cookbooks

- America's Best Cookbook for Kids with Diabetes by Colleen Bartley
- Betty Crocker Diabetes Cookbook
- Better Homes and Gardens: New Diabetic Cookbook
- Delicious Dishes for Diabetics: Eating Well with Type 2 Diabetes by Robin Ellis
- The Sweet Life: Diabetes without Boundaries by Sam Talbot
- The American Diabetes Association Diabetes Comfort Food Cookbook by Robin Webb, MS
- The Type 2 Diabetes Cookbook by Lois Soneral

Websites

- Academy of Nutrition and Dietetics (eatright.org)
- American Diabetes Association (diabetes.org)
- College Diabetes Network (collegediabetesnetwork.org)
- Diabetes Care and Education Practice Group (dce.org)
- National Diabetes Education Program, NDEP (ndep.nih.gov/diabetes/youth.youth.html)
- National Institute of Diabetes and Digestive and Kidney Diseases (niddk.nih.gov)
- Recipe Nutrition (recipenutrition.com)
- Spark People (sparkpeople.com)
- United States Department of Agriculture, USDA MyPlate (choosemyplate.gov)

Diabetes and Health Apps

Apple and Android phone apps unless noted

Blood Sugar Tracking

- T1D1
  - Calculate insulin doses
  - Log blood sugars and insulin doses
  - Track your favorite foods

- mySugr
  - Log your blood sugar
  - Look up carb information
  - Track your insulin doses

- Accu-Chek Connect
  - Log your blood sugar from meter automatically
  - Helps show trends and patterns

- OneTouch Reveal
  - Sync your blood glucose data
  - Track your carbs, insulin, and exercise in a logbook

- Sugarmate
  - Link with CGM to track and share data with other caregivers
  - You can customize alerts
  - Apple app
  - Android through the web

- Dexcom G6
  - Personalized trend alerts to help you learn patterns and better manage your diabetes

Carbohydrate Tracking

- CalorieKing
  - Look up carb information for restaurant meals and other foods you eat
  - Apple app
  - Android through the web

- MyFitnessPal
  - Look up nutrition info from a very large database of foods
  - Also has restaurant meals

- Cronometer
  - An app and website to search and log carb info
  - Log your exercise, health data and notes

- HappyForks.com
  - A website to analyze recipes (not an app)
  - Search and track carbs

Exercise

- Nike Training Club
  - 185+ free workouts for all fitness levels with guidance from Nike trainers

- Sweat Deck
  - Choose an exercise to match each suit. Do the exercise as cards are drawn from the deck.
  - A way to add different types of activity to your workout
  - Apple app only

- Sworkit Kids
  - Make a custom workout that feels like a game with videos to lead you along the way.

- 7 Minute Workout
  - Make a custom full-body workout by putting together bodyweight exercises
  - Apple app only

- J&J Official 7 Minute Workout
  - Short exercises you can put together for a customized workout

- YouTube
  - Search for your favorite way to move your body
  - Exercise videos that range from Zumba to boxing to strength training

Notes

Exercise and Diabetes

Exercising, or being active, is an important part of taking care of your diabetes and in staying healthy. It helps your insulin work better.

Regular exercise may:

- Help with blood sugar control and keep your body at a healthy weight. Your body likes to use carbohydrate for energy.
- Make your muscles and bones stronger.
- Give you more energy.
- Help with stress and make your mood better.
- Help you sleep better.

If you are not used to being active, it can be hard at first. After you exercise regularly, it gets easier to do each day. All exercise is good for you. Here are some ideas for getting active.

Indoor activities at home

- Climbing stairs
- Dancing
- DVDs for aerobics, dancing, Zumba, or yoga
- Jumping rope
- Lifting weights
- Ping pong
- Swimming or water aerobics
- Treadmill, elliptical, or stationary bike
- Vacuuming or putting away laundry
- Wii Fit or Wii Sport
- Yoga

Outdoor activities in summer

- Hula hooping
- Jumping on the trampoline
- Playing basketball
- Riding your bike
- Rollerblading or skating
- Swimming
- Throwing a Frisbee or ball
- Walking or jogging
- Water sports, such as canoeing, kayaking, or paddle board

Outdoor activities in winter

- Cross country or downhill skiing
- Ice fishing
- Ice skating
- Scooping or snow blowing sidewalk/driveway
- Sledding or playing in the snow
- Walking outside or inside (mall walking)

Sports

- Baseball or softball
- Basketball
- Bowling
- Boxing or kick boxing
- Curling or hockey
- Dance
- Football
- Golf or Frisbee golf
- Gymnastics
- Horseback riding

- Martial arts
- Soccer
- Swimming
- Tennis
- Volleyball

How much activity do I need?

Anything is great! Try for 60 minutes each day. It does not have to be all at the same time.

For example:

School PE class:	30 minutes
Walking the dog:	15 minutes
Riding your bike with friends	15 minutes
Total:	60 minutes

Checking and Keeping Track of Blood Sugar Levels

Checking your blood sugar is an important part of taking care of your diabetes. Blood sugar is checked on a small machine called a blood sugar meter.

When should I check my blood sugar?

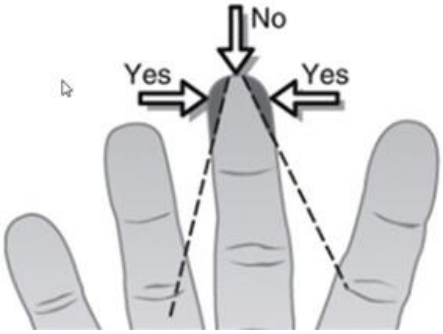
Most kids check their blood sugar before each meal and at bedtime. Your care team will tell you what times of day to check it.

Blood sugar target ranges:

- **Before meals**: 80 to 130
- **1 to 2 hours after a meal**: less than 180

A diabetes nurse will teach you how to check your blood sugar.

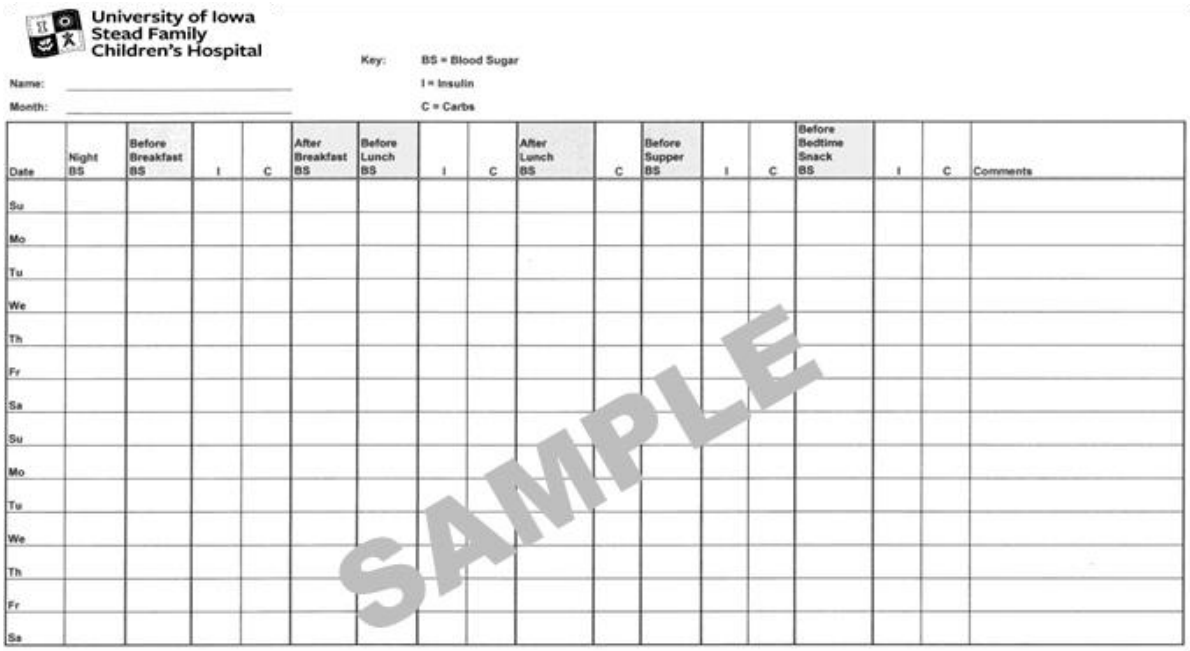
Follow these steps:



1. Wash and dry your hands to be sure to get an accurate reading.
2. Put a test strip into the meter.
3. Use a small needle, called a lancet, to poke your finger. This will get a very tiny drop of blood on your fingertip.
4. Touch the window on the test strip to the drop of blood on your finger. The test strip "sucks" the drop of blood into the strip.
5. In a few seconds, your blood sugar reading will show on the screen on the meter.
6. Keep track of your blood sugars so you, your family, your school, and your diabetes team can help keep your diabetes in control.
    - Write **all** your blood sugar readings on the blood sugar record log.
    - Some people use an app on their smart phone to record their blood sugars.

Keeping track of your blood sugars is important because:

- Your diabetes doctor and nurse will talk to you on the phone or by email about your blood sugar log on a regular basis.
- They will help you change your insulin doses if needed.
- If you do not keep track of your blood sugars by writing them down or entering them into an app in your phone, your doctor or nurse will not be able to help you get good control of your diabetes.



University of Iowa Stead Family Children's Hospital

Key: BS = Blood Sugar
I = Insulin
C = Carbs

Name: _____

Month: _____

Date	Night BS	Before Breakfast BS	I	C	After Breakfast BS	Before Lunch BS	I	C	After Lunch BS	C	Before Supper BS	I	C	Before Bedtime Snack BS	I	C	Comments
Su																	
Mo																	
Tu																	
We																	
Th																	
Fr																	
Sa																	
Su																	
Mo																	
Tu																	
We																	
Th																	
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SAMPLE

Blood sugar log

Diabetes Medicines for Kids with Type 2 Diabetes

Metformin (pills)

- Helps the body do a better job of using the insulin it makes
- Helps your liver stop putting out sugar when your body does not need it
- **Works very well if kids are eating healthy and staying active**
- Helps your blood sugars get lower
- Can help you lose weight
- The only diabetes pills approved for kids under age 18
- Sometimes it is used alone. Sometimes kids will need to take both Metformin and insulin shots
- Your doctor will tell you to take Metformin with meals 1 to 2 times each day.

It is very important to take your pills each day. Do not skip them. Make a routine that will help you remember. Ways to help you remember to take your pills are:

- Your parents need to help you.
- Buy a pill box at a pharmacy that has compartments for each day of the week. One time a week, your parents should fill the pill box with your pills.
- Put the pill box on the table at breakfast and supper time each day.
- Parents should remind you and then watch you take the pills each day.
- Parents should get the Metformin refills at your pharmacy each month.

Side effects of Metformin are:

- Mild stomach pain or upset stomach
- Nausea (feeling like you want to vomit/throw up)
- Diarrhea (loose runny poop)
- Belly bloating or extra gas in the belly

Do not stop taking the pills if your belly doesn't feel good!

These side effects often get better and go away after a few weeks. Keep taking the pills and call your care team if your belly does not feel better after 2 or 3 weeks.

If you are vomiting (throwing up):

- Stop taking Metformin
- Call your diabetes doctor or nurses for help:
    - Monday to Friday, 8 a.m. to 4:30 p.m., call the Pediatric Diabetes Nurses at 319-356-2229
    - After hour/weekends/holidays, call 319-356-1616 and ask for the Pediatric Endocrinologist on-call

Victoza (liraglutide)

This is a medicine approved for children with diabetes. It is a shot that is given 1 time each day. It is **not** insulin.

It helps manage diabetes in many ways, without causing low blood sugar. It:

- Helps your body make more of its own insulin
- Helps the stomach feel fuller for longer after meals
- Lowers how much extra glucagon the body makes
    - Glucagon makes blood sugar go higher.
- Can cause weight loss
- Is good for a person who cannot tolerate metformin
- Is good for a person who needs extra help managing high blood sugar

Insulin

There are 2 types of insulin:

- Rapid-acting insulin
- Long-acting insulin

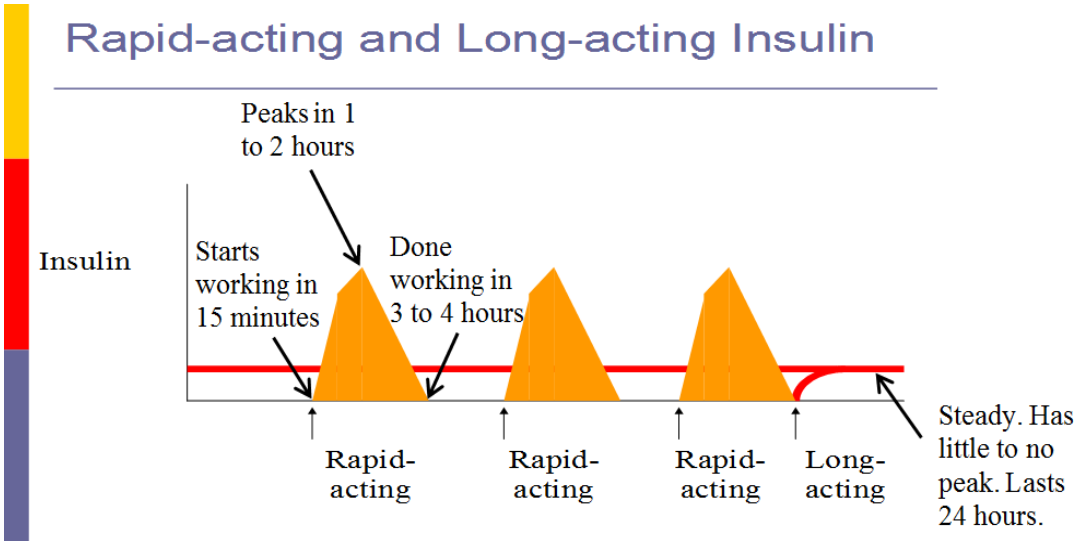
Your diabetes doctor will prescribe the brand of insulin your insurance covers.

What should I know about rapid-acting insulin?

- The level of sugar in the blood starts going up very fast when carbohydrate breaks down into sugar in the body. Rapid-acting insulin opens the door on the body cell so sugar can get out of the blood and into the cell fast.
- Give yourself rapid-acting insulin **before eating** carbohydrate at mealtimes.
    - **Take rapid-acting insulin 15 minutes before eating.** This will give you better blood sugar control than taking it just before eating.
    - It can work right away, as your blood sugar starts to go up.
- Most people take rapid-acting insulin 3 times a day, because they eat 3 meals a day.
- Brands of rapid-acting insulin are:
    - Humalog®
    - Novolog®
    - Apidra®
    - Fiasp®
    - Admelog®

What should I know about long-acting insulin?

- You need to take long-acting insulin 1 time a day if your first blood sugar in the morning is too high.
- In type 2 diabetes, the body is resistant to the insulin the body makes. Blood sugars stay higher than the normal range even during the time of day you are not eating carbohydrate. So, during the night, when you are sleeping, your body may still need a small amount of insulin working all the time. Your first blood sugar in the morning, when you wake up, will be too high without a little bit of insulin working 24 hours a day.
- Brands of long-acting insulin are:
  - Basaglar®
  - Lantus®
  - Levemir®
  - Semglee®
  - Toujeo®
  - Tresiba®
- All of them give the body a continuous little bit of insulin that lasts for 24 hours or longer.
- **You must take long-acting insulin at the same time each day.** That way you always have a little bit of insulin in your body.



Rapid-acting and long-acting insulin chart

Insulin storage

Before the first time you use a new insulin bottle, cartridge, or pen:

- Check the expiration date.
- Insulin should look clear.
- Insulin should be stored in the refrigerator at 36° F to 46° F.
- Do **not** let insulin freeze.

After you open an insulin bottle, cartridge, or pen (which means you puncture the top with a needle):

- **Bottles** may be stored in the refrigerator or kept at room temperature.
- **Cartridges and pens** should be stored at room temperature.
- Throw **all** opened insulin away after 28 days, except:
    - Levemir, it lasts 42 days
    - Tresiba, it lasts 56 days
- Store opened insulin at room temperature, between 59° F and 86° F, and away from direct heat and sun.
- Do not let it get hot.
- Do not let it freeze.
- Never store it in your car.

Traveling with insulin

- Take more supplies with you than you will need.
- Protect your insulin from heat and from freezing.
    - Do not store it in the glove compartment.
- Always carry your supplies with you.
    - Do not check it with luggage on an airplane. Keep it in your carry-on bag.
    - Go to tsa.gov to learn more about flying with insulin.

Notes

How to Give Insulin Shots

How do I give myself an insulin shot with a syringe?

Your diabetes nurse will teach you how to give yourself insulin and make sure you can do it right.

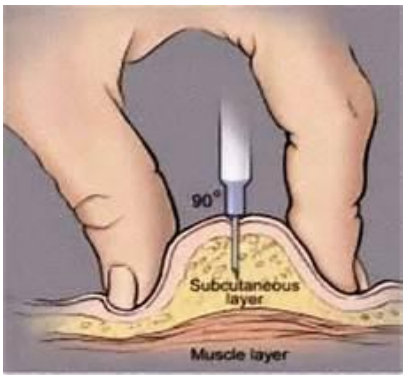
Follow these steps:

1. Wash your hands.
2. Get all the supplies:
    - Insulin bottle (vial)
    - Insulin syringe
    - Alcohol swab
3. Wipe the top of the insulin bottle with the alcohol swab.
4. Pull back on the plunger of the syringe to the number of units you will take.
    - For example, if your insulin dose is 8 units, you need 8 units of air in the syringe.

5. Put the needle through the rubber on the top of the insulin bottle.
6. Inject all the air into the bottle.
7. Hold the needle in the bottle and turn the bottle upside down.

8. Slowly pull back on the plunger to get insulin into the syringe.
    - You will see some small bubbles inside the syringe. The best way to look for bubbles is to hold the syringe up toward a light or window. Push the plunger to squirt all the insulin and air bubbles back into the bottle to get the bubbles out.
9. Slowly pull back on the plunger again to get the correct amount of insulin in the syringe. Be sure there are no air bubbles. If you still see bubbles, repeat step 8.

10. When you have the correct amount of insulin and no bubbles, you are ready to give the shot. Take the needle out of the bottle.
    - Do **not** to touch the needle to anything. This is how germs get on the needle. If that happens, throw the syringe into a sharps container and start all over.
11. Find the area on your body where you will give the insulin.
12. Gently pinch up the skin and **quickly** stick the needle **straight** into the skin at a **90-degree angle**.



13. Hold the needle in the skin and slowly push down on the plunger until all the insulin is out of the syringe.
14. Keep the needle in the skin and **slowly** count to 10 after all the insulin is in.
15. Take the needle out of the skin after you finish counting.
16. Look at the place where the needle was in the skin. Look for any insulin that might have leaked out onto the skin.
    - If it did leak out, do **not** give yourself more insulin. Giving more insulin could cause a low blood sugar if you give yourself too much.
    - Make a note on your blood sugar record sheet that the insulin leaked.
    - If your blood sugar is high at your next check you will know the reason why.
    - Count to 15 or 20 if you are always seeing insulin leak onto the skin.
17. Throw the used syringe in a medical sharp or a puncture-proof container, such as a liquid detergent bottle or empty soda pop bottle.
    - You can buy a medical sharps container at a pharmacy

How do I give myself a shot with an insulin pen?

Insulin pens are a convenient and accurate way to give insulin safely and easily.

There are 2 types of insulin pens:

- **Disposable pen**, pre-filled with insulin that you discard after empty or expires
    - Some pens dial in whole units and some in half-units.
- **Non-disposable pen device** that holds a cartridge of insulin you load into the pen device. Do not throw away the pen device. Use it over and over.
    - **NovoPen Echo** used with Novolog penfill cartridges
    - **InPen** -Bluetooth enabled smartpen that works with an app on your phone.
        - Humalog InPen® uses Humalog® penfill cartridges
        - Novolog InPen® uses Novolog® penfill cartridges

Your diabetes nurse will help you decide which pen is best for you. We will need to determine which pen and which insulin is covered by your insurance.

For disposable pens, the insulin is already in the pen and you will get a new pen when it is empty or it expires.

For pen devices, you will need to load the cartridge into the pen device, and it can stay there until it is empty, or it expires.

Follow these steps for using an insulin pen.

1. **Get the pen ready.**
    a. Wash your hands.
    b. Get out your insulin pen and pen needle.
    c. Pull the paper tab off the pen needle.
    d. Screw the needle onto the end of the pen.
    e. Take off the **outer** needle cover and then the **inside** needle cover.
        - Save the outer cover for later.
        - Discard the smaller inside needle cover.
    f. Do **not** touch the needle to anything. This is how germs get on the needle. If this happens, recap and throw the needle in a sharps container and start over.
2. **Prime the insulin pen.**
    It is important to **get all the air out of the pen needle** so that the correct amount of insulin is given. This is called "priming" the pen or doing an "air shot."
    a. Turn the dial knob on the end of the pen to 1 or 2 units.
    b. Hold the pen with the needle pointing up to the ceiling and push the knob in all the way. You should see at least 3-4 drops of insulin squirt out the end of the pen needle.
    c. Check the dial to be sure the dose window changes back to zero after you prime the pen.

3. Dial up your insulin dose and give the injection.

a. Turn the dial knob to the number of units of your insulin pen.
   - If you go too far you can dial it backwards.

b. Double check your dose with a responsible person.

c. Find the area on your body where you will give the insulin.

d. Gently pinch up the skin and **quickly** stick the needle **straight** into the skin at a **90-degree angle**.

e. Hold the needle in the skin and use your thumb to push down on the dial knob until it stops.

f. Check to be sure the dose window is at zero.

g. Keep the needle in the skin and **slowly** count to 10 after all the insulin is in.

h. After you finish counting, take the needle out of the skin.

i. Look at the place where the needle was in the skin. Look for any insulin that might have leaked out onto the skin.
   - If it did leak out, do **not** give yourself more insulin. That could cause a low blood sugar if you give yourself too much.
   - Make a note on your blood sugar record sheet the insulin leaked.
   - If your blood sugar is high at your next check, you will know the reason why.
   - Try counting to 15 or 20 if you are always seeing insulin leak onto the skin.

j. Put the outer needle cover over the pen needle and twist it to unscrew the needle.

k. Throw the used pen needle in a medical sharps or puncture-proof container, such as a liquid detergent bottle or empty soda pop bottle. You can buy a medical sharps container at a pharmacy.

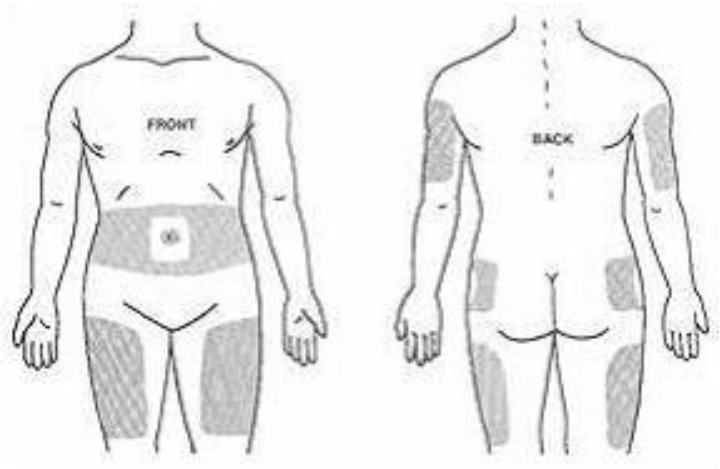
l. Put the cover back on the pen to keep it clean.

Where do I give myself insulin shots?

Insulin must be given into fat. This will help insulin work well. Fat also has fewer nerve endings, so it will not hurt as much.

The 4 main areas on the body that are **best** to give insulin shots are the:

- Abdomen (belly, stomach, tummy). This is where insulin gets absorbed (soaked up) the fastest. You should be able to gently pinch up at least 1/2 inch of fat. Stay about 1 inch away from the belly button.
- Back side of the upper arm halfway between the elbow and the shoulder
- Top and outer side of the thigh halfway between the hip and the knee
- The buttocks (butt). Use the upper outer part of the hip area.



Insulin injection sites

- Outer arm
- Abdomen
- Hip area
- Thigh

Do **not** give yourself insulin in the same spot each time. Use different spots in each area. Giving a shot in the same spot each time causes hard lumps in skin. Insulin will not absorb as well in hard lumps, and blood sugar can go too high.

You could start an insulin routine, such as:

- Breakfast shot in the belly (abdomen)
- Lunch shot in an arm
- Supper shot in a leg
- Bedtime shot in the buttocks

High Blood Sugar and Checking Ketones

There are many reasons your blood sugar can go too high. It is important to know what causes high blood sugar and why high blood sugar is dangerous.

Causes of high blood sugar

- Eating too much carbohydrate or too much **quick-acting** carbohydrate
- Not enough activity
- Stress
- Not taking enough insulin
- Forgetting to take insulin
- Illness or infections
- Injury or surgery

Signs of high blood sugar

- Urinating (going pee) a lot
- Thirsty and drinking a lot
- Dry mouth and dry skin
- Blurry vision
- Yeast infections in the groin area

It is normal to have high blood sugar once in a while. Call your diabetes nurses if:

- You have high blood sugar a lot of the time
- You have high blood sugar that keeps happening about the same time each day

The nurses can help figure out the reason for the high blood sugar and suggest changes in insulin, exercise, or eating to help the high blood sugar come down.

What are ketones?

Ketones are an acid that can build up in the body when your body uses fat instead of sugar for energy. Ketones are caused from the breakdown of fat. They harm the body.

Body fat is used for energy when:

- There is not enough insulin in the body to use sugar for energy
- You do not eat carbohydrate for long periods of time, such as skipping meals

When should I check for ketones?

- When your blood sugar is **240 or higher**
- Check ketones even if your blood sugar is not high if you are:
  - Sick, have an infection, or trauma
  - Vomiting (throwing up)
- If you forgot an insulin shot

What should I do when my blood sugar is high?

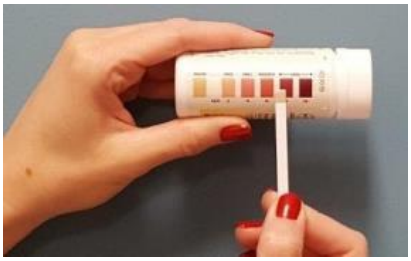
If your blood sugar is **240 or higher**:

1. **Check ketones**. If you do not check, you will not know if you have them.
2. **For any amount of ketones, including trace, drink a lot of carbohydrate-free drinks** right away.
3. **If you have small, moderate, or large ketones, take extra rapid-acting insulin right away**. Call your diabetes nurses or doctor for help with this if you are unsure.
   - Follow the instructions for taking extra rapid-acting insulin. You can find these instructions in the **Ketones** section of this book.
4. **Call your diabetes care team at 319-356-1616** if you have ketones**.**

How do I check for ketones?

Steps to check for urine ketones:

1. Gather the supplies
    - Urine ketone strips (check expiration date)
    - Small paper cup to pee in
    - Timer or watch with a second hand
2. Unscrew the lid and take 1 strip out of the bottle.
3. Screw the lid back on right away to keep them fresh.
4. Do not touch the test end of the strip.
5. Dip the test end of the strip into a cup of **fresh** urine.
6. Take it out right away.
7. Remove extra urine by drawing it along the rim of the cup.
8. **Exactly 15 seconds** after dipping it in the urine, compare the ketone strip with the color chart on the bottle of ketone strips.



9. If you have ketones, follow the instructions in the **Ketones** section.

Ketone strip storage

- Keep ketone strips at room temperature between 59° and 86° F. Keep them out of direct sunlight.
- After opening the first time, write the date on the bottle.
- **Always** put the lid back on right away after opening.
- Do not keep them in the bathroom. The moisture could ruin the strips.
- Throw the strips away 6 months after first opening if they are not gone.
- Do not use them after the expiration date. Call your pharmacy for a refill.

Long-term Problems from High Blood Sugar

High blood sugar over a long period of time, such as months or years, causes damage to body organs. This damage is not usually seen for 10 years or longer.

High blood sugar, over time, leads to:

- Kidney damage and kidney failure
- Blood vessel damage that can cause heart attacks and strokes
- Eye disease that can cause poor vision or blindness
- Nerve damage that can cause pain like pins and needles in the feet
- Sores on the feet or legs that do not heal and could lead to removal of a toe, foot, or leg
- Sexual problems, such as not being able to get an erection

Take care of your diabetes and keep most of your blood sugars near the normal range throughout your life to lower your chance of these long-term problems.

High blood sugar, over time leads to issues with:

Eyes

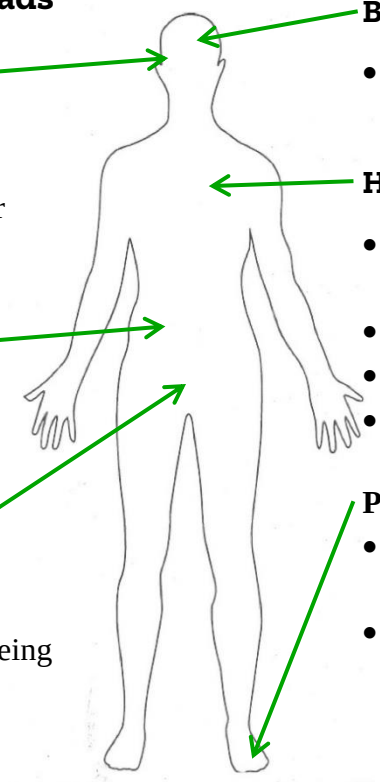
- Retinopathy
- Eye disease that can cause poor vision or blindness
- Glaucoma

Kidneys

- Nephropathy
- Kidney damage
- Kidney failure
- High blood pressure

Autonomic neuropathy

- Sexual problems, such as not being able to get an erection



Brain

- Blood vessel damage that can cause strokes

Heart

- Blood vessel damage that can cause heart attack
- Hardening of the arteries
- Clogged blood vessels
- High blood pressure

Peripheral neuropathy

- Nerve damage that can cause pain like pins and needles in the feet
- Sores on the feet or legs that do not heal and could lead to removal of a toe, foot, or leg

Low Blood Sugar and Glucagon

A low blood sugar is less than 70.

Low blood sugar can happen if you are taking insulin for your diabetes. It is important to know what can cause low blood sugar and how to treat it. You can prevent low blood sugar by knowing what causes it.

Causes of low blood sugar

- Taking too much insulin
- Not eating enough carbohydrate after taking insulin
- Getting more activity than usual
- Drinking alcohol

Signs of low blood sugar

- Sweating
- Shaking
- Pale skin/lips
- Very hungry
- Weakness
- Tired or drowsy
- Headache
- Irritable or grouchy
- Confused
- Seizure
- Fainting or passing out

Stop what you are doing right away and check your blood sugar if you feel any of these signs.

What should I do if my blood sugar is low?

A blood sugar less than 70 is too low.

1. **Take 10 to 15 grams of quick-acting carbohydrate right away**, such as:
    - Drink 3 to 4 ounces of juice
    - Drink 3 to 4 ounces of soda pop that has sugar (not sugar-free)
    - Chew 3 to 4 glucose tabs

2. Wait **at least 15 to 30 minutes**. If you still feel signs of low blood sugar, then recheck it.
3. Repeat the cycle if your blood sugar is still less than 70. Take another 10 to 15 grams of quick-acting carbohydrate, then wait 15 to 30 minutes.
    - Do not take more than 15 grams of carbohydrate for a low blood sugar. Too many carbohydrate can make the blood sugar go too high.
    - Do not eat carbohydrate for a low blood sugar. Food does not work fast enough to bring the blood sugar up right away.

Notes

Glucagon for severe low blood sugar

When low blood sugar is not treated quickly it can become severely low. When this happens, you are not able to eat or drink quick-acting carbohydrate or help yourself. You could become unconscious (pass out) or have a seizure (rhythmic muscle twitching).

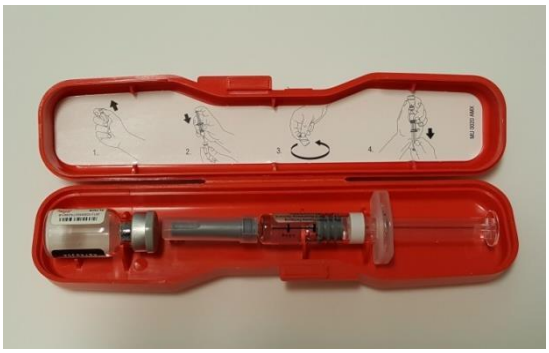
If this happens, you will need glucagon. Glucagon works by telling your liver to release sugar into your bloodstream. This will help bring your blood sugar back up.

It is important to have glucagon with you and know where it is at all times. Your relatives, teachers, coaches, friends and childcare providers need to know how and when to give it.

Glucagon comes in 3 forms:

- **Glucagon ® emergency kit or GlucaGen HypoKit ®:** This is a kit with a syringe that holds water and a small bottle of glucagon powder. It is not stable in liquid form, so it must be mixed just before giving it.
- **Baqsimi ®:** This is an intranasal powder glucagon dispenser (squirted up the nose/nostril).
- **Gvoke HypoPen ®:** This is a pre-mixed auto-injector pen where you insert into fat tissue and you do not see the needle.

Glucagon Emergency Kit® or GlucaGen HypoKit ®



How to give Glucagon® emergency kit or GlucaGen HypoKit®: (injection into the muscle)

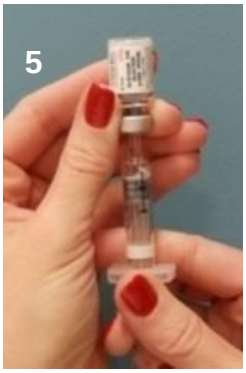
1. Pop the lid off the top of the bottle with your thumb.

2. Take the cover off the needle on the syringe. Do not remove the plastic clip from the syringe, or the pushrod could come out and the water will come out.

3. Push the needle through the rubber stopper on the bottle and inject all the water into the bottle of glucagon powder.

4. Remove the syringe from the bottle. Swirl the bottle until the liquid inside is clear and looks like water.

5. Push the needle through the rubber stopper and slowly draw out the liquid.



   - **Infants and children less than 20 pounds get 1/4 the liquid**.

     There is not a 1/4 mark on the syringe. Fill it halfway between empty and the 0.5 mg mark. This would equal 0.25 mg (1/4 of the liquid).
   - **Children weighing 21 to 44 pounds get half of the liquid.** There is a mark on the syringe for 0.5 mg (1/2 of the liquid).
   - **Children weighing over 44 pounds get all the liquid.** There is a mark on the syringe for 1.0 mg (all the liquid).

6. Inject the glucagon into the thigh muscle; in the same area where insulin is given.

7. Turn the child on his or her side.

8. Call 911 right after giving glucagon.

9. After the child is awake, alert, and can swallow, give him or her quick-acting carbohydrate, such as juice. Then give the child a carbohydrate snack with protein, such as a peanut butter sandwich.

10. Throw the used syringe and unused glucagon in a medical sharps or a puncture- proof container, such as a liquid detergent bottle or empty soda popbottle.
    - Throw away glucagon if it is not used within 1 hour of mixing it.
    - You can buy a medical sharps container at a pharmacy.

11. Call your diabetes doctor or nurse if your child needed glucagon.

Glucagon kit storage

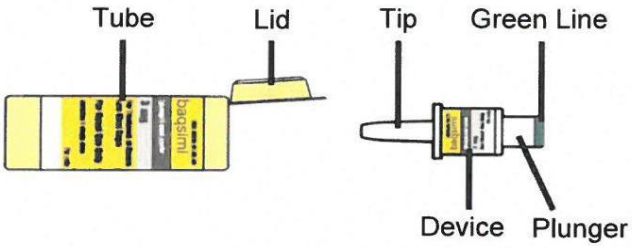
- Keep glucagon at room temperature between 59° and 86° F.
- Do **not** let it get hot.
- Do **not** let it freeze.
- Do **not** keep it in your car.
- Find the expiration date on the back of the kit.
- Get a refill at your pharmacy when it expires.

Notes

Baqsimi® (nasal spray)

How to give Baqsimi® (nasal powder):

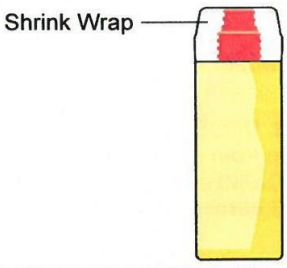
Tube and Device Parts



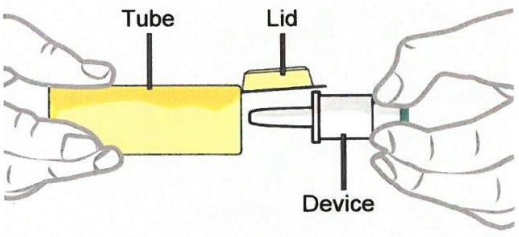
Important Information to Know

- **Do not** remove the Shrink Wrap or open the Tube until you are ready to use it.
- If the Tube has been opened, BAQSIMI could be exposed to moisture. **This could cause BAQSIMI not to work as expected.**
- Do not push the plunger or test BAQSIMI before you are ready to use it.
- BAQSIMI contains 1 dose of glucagon nasal powder and **cannot** be reused.
- BAQSIMI is for nasal (nose) use only.
- BAQSIMI will work even if you have a cold or are taking cold medicine.

Preparing the Dose



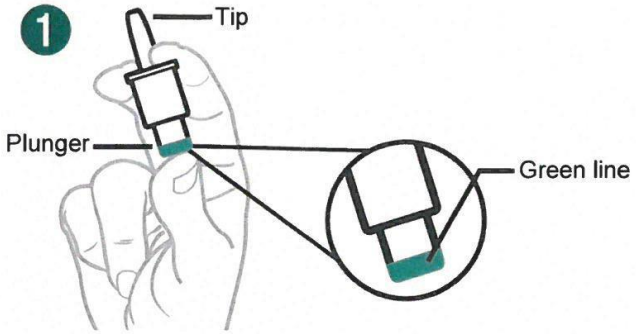
- Remove the Shrink Wrap by pulling on red stripe.



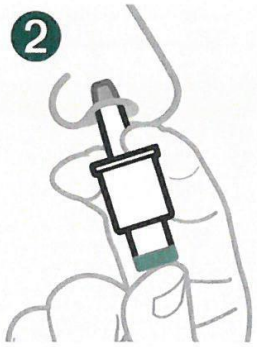
- Open the Lid and remove the Device from the Tube.

  Caution: Do not press the Plunger until ready to give the dose.

Giving the Dose



- **Hold Device** between fingers and thumb.
- **Do not** push Plunger yet.



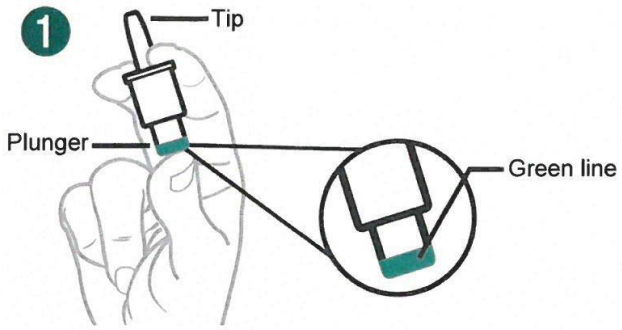
- **Insert Tip** gently into one nostril until finger(s) touch the outside of the nose.

- **Push Plunger** firmly all the way in.
- **Dose is complete when the Green Line disappears.**

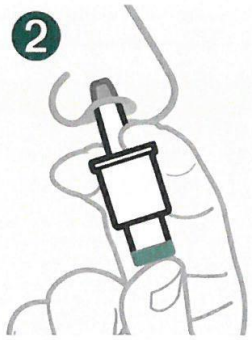
After giving BAQSIMI

- Call for emergency medical help right away.
- If the person is unconscious turn the person on their side.
- **Throw away the used Device and Tube.**
- Encourage the person to eat as soon as possible. When they are able to safely swallow, give the person a fast acting source of sugar, such as juice. Then encourage the person to eat a snack, such as crackers with cheese or peanut butter.
- If the person does not respond after 15 minutes, another dose may be given, if available.

Giving the Dose



- **Hold Device** between fingers and thumb.
- **Do not** push Plunger yet.



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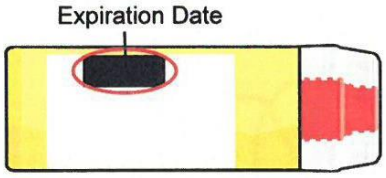
- If the person does not respond after 15 minutes, another dose may be given, if available.

Storage and Handling

- **Do not remove the Shrink Wrap or open the Tube until you are ready to use it.**
- Store BAQSIMI in the shrink wrapped Tube at temperatures up to 86° F (30°C).
- Replace BAQSIMI before the expiration date printed on the Tube or carton.



Other Information

- **Caution: Replace the used BAQSIMI right away so you will have a new BAQSIMI in case you need it.**
- Keep BAQSIMI and all medicines out of the reach of children.

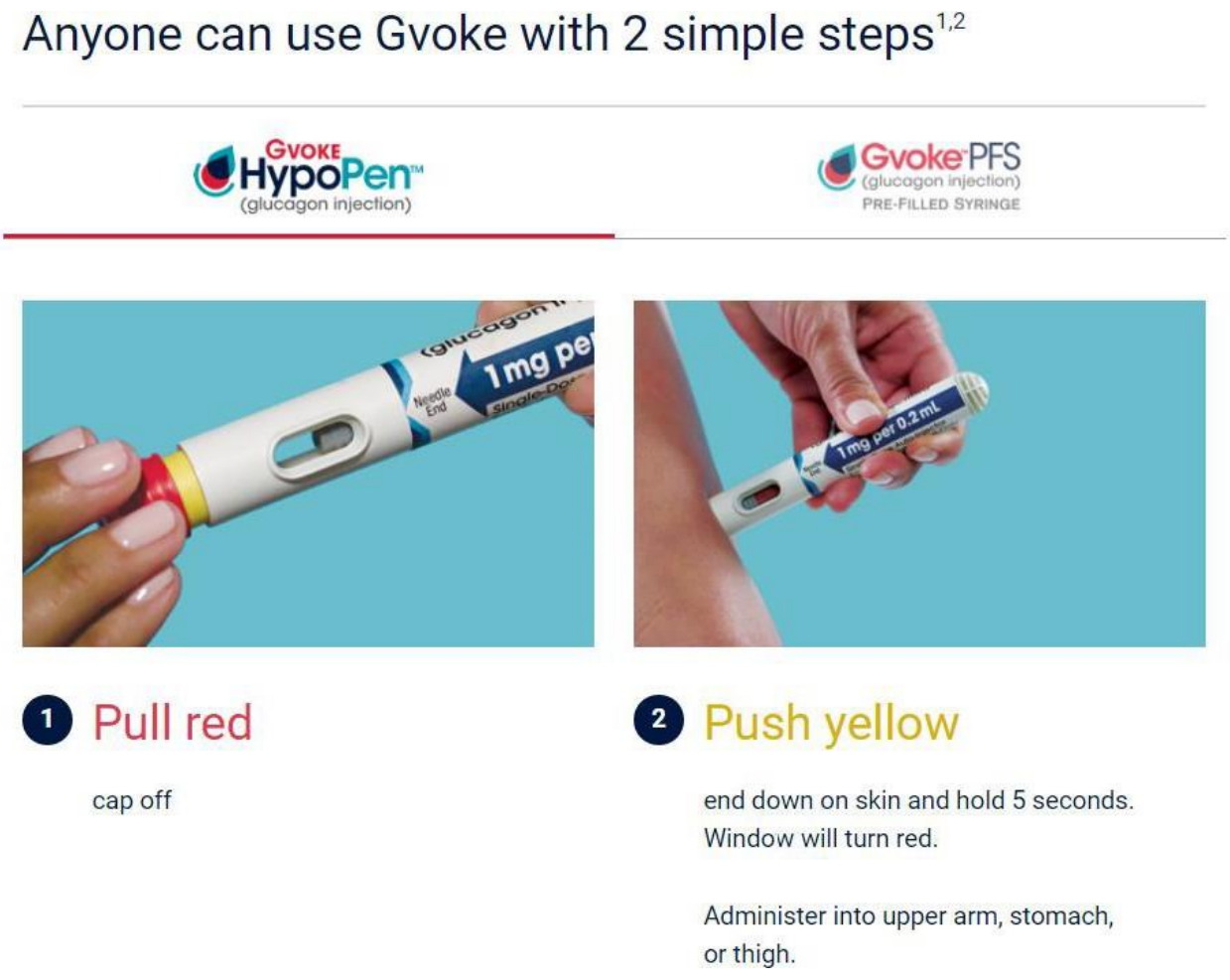
For Questions or More Information about BAQSIMI

- Call your healthcare provider
- Call Lilly at 1-800-Lilly-Rx (1-800-545-5979)
- Visit www.baqsimi.com

Gvoke HypoPen® (auto-injection into fat)

Use this pre-mixed auto-injector into the fat when you:

- Have tried bringing up the blood sugar with drink or food and it is not working
- Are unable to swallow safely
- Feel like passing out
- Pass out or have a seizure



How to give Gvoke®

1. Pull off **red** cap.
2. Push **yellow** end into skin. Do this in the same place you give insulin shots. There is no button-pushing. Just push it in the skin and hold it down on the skin.
3. Listen for the click.
4. Count to 5.
5. Window will turn red.
6. Pull away from skin.
7. Roll person on their side.
8. Call 911.
9. Repeat the dose in 15 minutes if person does not respond.

Dosing

Weight of person	Dose
Under 100 pounds	0.5 mg per dose
Over 100 pounds	1.0 mg per dose

Storage of Gvoke®

- Store Gvoke® at temperatures between 68° and 77° F
- Do **not** keep in the refrigerator.
- Do **not** let it freeze.
- Keep Gvoke® in the foil pouch until you are ready to use it.

Hemoglobin A1c and Staying Healthy

There are many ways you, your family, and your care team will know if your diabetes is in good control.

- **Blood sugar records.** The doctors and nurses will:
  - Look at your blood sugar records
  - Download your blood sugar meter readings when you come to visits
  - Look for trends in your blood sugars and can make suggestions for changes you can make to better control your blood sugars
- **Hemoglobin A1c (A1c) results.**
  - Every 3 to 4 months when you come for appointments you will have a test called A1c.
  - The nurse will do a finger stick and get a small drop of blood from your finger. In less than 10 minutes you will get the result.
  - The result is the **average amount of sugar in your blood stream in the past 3 to 4 months.**
  - The higher your blood sugar during the past 3 to 4 months, the higher the A1c will be.
  - Kids under age 18 should try to have an A1c of 7.0 percent or lower. This is the same as an average blood sugar of 170.

A1c (%)	Average blood sugar (MG/DL)
6	135
7	170
8	205
9	240
10	275
11	310
12	345

Hemoglobin A1c level compared to daily blood sugar levels

High blood sugar over a long period of time causes damage to body organs. Keeping your A1c as close to normal as possible will help your organs stay healthy. This lowers your chance of long-term health problems, such as:

- Kidney damage and kidney failure
- Blood vessel damage that can cause heart attacks and strokes
- Eye disease that can cause poor vision or blindness
- Nerve damage that can cause pain like pins and needles in the feet
- Sores on the feet or legs that do not heal and could lead to removal of a toe, foot, or leg
- Sexual problems, such as not being able to get an erection

The chart below shows the risk of getting eye (retinopathy), kidney (nephropathy), and nerve (neuropathy) disease compared to the A1c result.

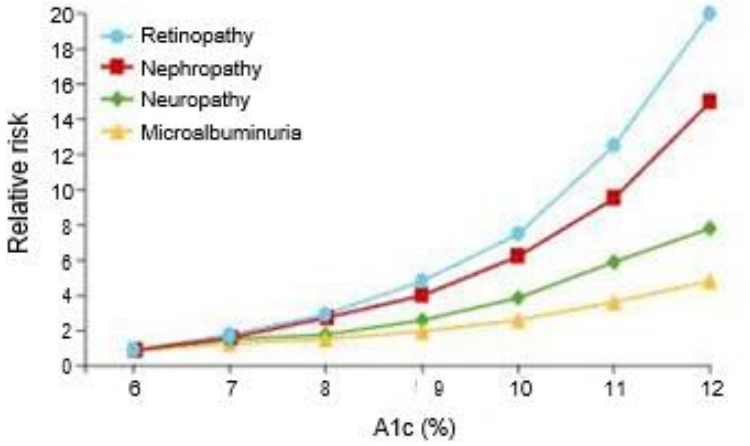


Chart of risk of disease compared to A1c results

Your care team wants to teach you how to take good care of yourself, so those things do not happen to you. It is important for you to:

- Come to your diabetes appointments and get your A1c checked every 3 to 4 months.
- Keep track of your blood sugars and make changes to your insulin doses when needed.
- Eat healthy and count carbohydrate each time you eat or drink so you can match your insulin dose to the carbohydrate.
- Be active every day to help balance your blood sugar and lower your chance of heart disease.
- Get your blood pressure checked at each diabetes visit every 3 to 4 months.
- Get your urine checked for a protein called microalbumin. This will be done 5 years after you find out you have diabetes and each year after that.
- Get your blood checked for cholesterol and other fats in your blood within the first year after you find out you have diabetes and every 5 years after that if it is normal.
- See an eye doctor (optometrist or ophthalmologist) at the age of 10 or after you have diabetes for 3 to 5 years. Then see them 1 time a year after that.
- Visit the dentist every 6 months. Brush and floss each day. Be sure to tell your dentist you have diabetes.
- Keep up to date on your scheduled immunizations.
- Get an influenza vaccine each year.

Notes

Living with Diabetes

Living with diabetes is hard. You may feel it is not fair. You may not want to do the things in this book, such as watching what you eat, staying active, checking your blood sugar, and taking insulin. You may be scared or mad or sad.

Some kids ignore it or pretend they do not have diabetes. Teens may feel different from their friends and want to be the same. Some kids don't want to be seen in public doing their blood sugar checks or taking insulin shots. A lot of kids feel it is too much responsibility, too hard, and get overwhelmed with all the things they are supposed to do. **All these feelings are normal.**

When you have diabetes, it is a change for everyone in your household. Your parents need to help you with everything no matter how old you are.

Your diabetes health care team wants to help you and your family learn how to take care of your diabetes. They are here to support you and help you learn how to accept your diabetes and learn how to cope with it.

Parents are the most important people to help you with your diabetes.

- When your parents help, you will not feel alone with all you need to do to take care of yourself.
- Parents need to give encouragement.
- Parents can make sure you eat healthy, get activity, and help you take insulin.
- Parents should help you check your blood sugar and keep the blood sugar log up to date.
- It is not your responsibility to do all your diabetes care by yourself, even if you are a teen.

Paying attention to your blood sugar levels so changes can be made when needed can help you to feel better about yourself. You will find that living with diabetes can become part of your everyday life. It should not hold you back from doing all the things other kids do.

With help from parents and others, and believing in yourself, you can grow into a healthy, happy adult!

Notes

Acknowledgements

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