



Children with Diabetes

**INFORMATION FOR SCHOOL
AND CHILD CARE PROVIDERS**



If you work with children, it is likely that at some point you will have a child with diabetes in your care. Nearly one child in every 400-500 develops diabetes. This brochure provides caregivers and school personnel with a basic understanding of the key components of diabetes care.

Diabetes requires a great deal of self-care and family support. When children with diabetes are away from the parent/guardian, they often rely on school nurses, other trained school staff members, and caregivers/babysitters to provide emergency diabetes care. They also rely on the school nurse or other trained school members and caregivers to be available to perform daily routine diabetes care tasks when they are unable to due to age, developmental level, inexperience, or diabetes emergency. These trained diabetes personnel and caregivers also provide the support and encouragement children need to carry out their self-care. Schools have a legal responsibility to provide aids and related services to meet the needs of children with diabetes.

What is Diabetes?

Diabetes is a chronic disease that impairs the body's ability to use food properly. Insulin is a hormone produced in the pancreas that is necessary for the body to convert food into energy. In people with diabetes, either the pancreas doesn't make insulin, the body cannot use the insulin properly, or both. Without insulin, glucose (sugar)—the body's main energy source—builds up in the blood.

Children with diabetes often have type 1, or "insulin-dependent," diabetes, in which the pancreas doesn't make insulin. They must administer insulin daily through injections or an insulin pump.

Children can also have type 2 diabetes. Type 2 diabetes used to be found mostly in older adults. But type 2 diabetes has been on the rise in children and adolescents. In type 2 diabetes, the body doesn't make enough insulin or the insulin the body does make doesn't work well. Children with type 2 diabetes are treated with diet and exercise, diabetes pills, and/or insulin.

Two kinds of problems can occur with diabetes, hypoglycemia and hyperglycemia. **Hypoglycemia**, or low blood glucose, occurs when blood glucose levels get too low, usually due to too much insulin, skipping or delaying meals or snacks, or excessive physical activity. Hypoglycemia often cannot be prevented and is the most immediate danger to children with diabetes. It is usually mild and can be easily treated by giving the child a food containing carbohydrates (or "carbs"). See page 8 for information on recognizing and treating hypoglycemia.

Hyperglycemia, also called "high blood glucose," occurs when blood glucose levels get too high. Untreated, hyperglycemia may develop into diabetic ketoacidosis (DKA), a very serious condition. In the short term, untreated hyperglycemia can result in impaired cognitive abilities and have an adverse impact on academic performance. In the long term, untreated hyperglycemia places the child at a higher risk for developing serious medical complications. See page 9 for information on recognizing and treating hyperglycemia.

Diabetes is **not** contagious. You cannot "catch" diabetes from someone who has it. But diabetes can run in families. Researchers are still studying how and why diabetes occurs in certain children and families and not in others.

Although diabetes cannot be cured, it can be managed. Research has shown that maintaining good control of blood glucose levels can prevent or delay long-term complications, such as blindness, kidney failure, heart disease, and nerve damage. Appropriate diabetes care usually includes regular monitoring of blood glucose levels and, for all children with type 1 and some children with type 2, administering multiple doses of insulin daily. All diabetes care involves nutrition and exercise plans to meet the individual child's needs. Children with type 2 diabetes may also take oral medication (pills). Together, these steps can help prevent hyperglycemia and hypoglycemia.

With good medical care and support from adults, children with diabetes can lead healthy, active, fun-filled lives.

Diabetes and the Law

There are laws protecting children with disabilities from discrimination in all public and most private schools and day care centers. These laws make sure that children are treated fairly at school and that their medical needs are met.

Treating Diabetes

Ideas about how to treat diabetes have changed a lot in recent years. Now, diabetes treatment plans are geared toward the needs of the individual child.

The goals of diabetes treatment in children are:

- To maintain normal growth and development
- To keep blood glucose levels within a target range (not too high, not too low) as often as possible
- To promote healthy physical, emotional, and social well-being

Efforts to maintain blood glucose levels in a target range involve balancing food, exercise and diabetes medicine. Food raises blood glucose levels and exercise and diabetes medication (like insulin) lower them. A good diabetes treatment plan includes:

- Eating healthful foods according to meal plan.
- Checking blood glucose levels regularly.
- Exercising regularly
- Taking medication (insulin or pills) when prescribed in the child's diabetes management plan.

Addressing School Diabetes Care: The Diabetes Health Care Plan

As soon as a new student with diabetes is enrolled, or an existing student is diagnosed with diabetes, school personnel (including the school nurse, the child's teachers, coaches, the principal, and others) should arrange to meet with the child's parents to review the child's Diabetes Health Care Plan (DHCP) and to determine how the DHCP will be implemented. A DHCP is a written diabetes medical management plan developed by the child's doctor, personal health care team, and family. The DHCP details the prescribed diabetes care plan, and is specifically designed for each student.

The DHCP should include:

- Date of diagnosis
- Current health status
- Emergency contact information
- Student's willingness and ability to perform self-management tasks at school
- When and how to check blood glucose and take insulin and/or diabetes pills

- Insulin, Glucagon, and other medications to be given at school
- Regular meal and snack times plan
- Exercise requirements
- Usual symptoms of hypo- and hyperglycemia and treatment
- When and how to notify the child's parents of problems
- When and how to contact the child's health care provider
- When to call for emergency medical assistance

The DHCP should be reviewed and updated each school year or if there is a change in the student's management plan, level of self-care, or school circumstances, or at the request of the student's parent or guardian.

Under federal law, some students should also have education plans that set out aids and related services to meet the child's needs. These are called Section 504 plans or Individualized Education Programs (IEPs). Education plans explain what accommodations, educational aids, and services are needed for each child with diabetes.

Insulin Injections

Some children manage diabetes with multiple daily insulin injections. Insulin injections are usually given at regular times each day and/or as needed to cover meals & snacks or to correct high blood glucose levels.

The kinds of insulin a child needs and the times insulin is taken are determined individually for each child. Some children receive insulin through a syringe or insulin pen. Others use a computerized device known as an insulin pump which delivers a continuous low dose of insulin throughout the day, much like a normal pancreas. An insulin pump looks a little like a pager and is worn on the child's waistband or belt. Pumps require the child (or trained school personnel) to monitor insulin delivery periodically throughout the day. An insulin pump comes with instructions for care and maintenance that should be supplied by the parents/guardians.

There is no strict rule about the age at which children should be able to give their own insulin injections or master insulin pump operation.



Some children are able to administer insulin on their own, others will need supervision, and some will need to have a school nurse or other trained diabetes personnel administer the insulin.

Blood Glucose Monitoring

Regular monitoring of blood glucose levels is one of the most important parts of diabetes care. Regular blood glucose checks must be done to determine the amount of glucose in the blood in order to help keep the blood glucose level within the target range as much as possible.

Diabetes health care professionals usually recommend that children check their blood glucose levels during the school day. For example, before eating lunch, before, during, or after strenuous exercise, and when symptoms of hypoglycemia or hyperglycemia occur. Younger or inexperienced children will need help checking their blood glucose levels, while older and more experienced children will be able to self-check.

It is medically preferable for children to monitor and treat their blood glucose levels in the classroom, playground, or wherever they happen to be in order to prevent symptoms from getting worse.

Blood glucose levels are measured in milligrams per deciliter (mg/dl). A health care provider will often identify a target range for blood glucose levels—for example, 80 to 180 mg/dl. It is important to keep blood glucose levels within this range as often as possible. However, it's not always possible to maintain blood glucose levels within the target range. It's important that children are never made to feel it's their fault if their blood glucose is out of range.

Meals and Snacks

The nutritional needs of children with diabetes do not differ from the needs of children without diabetes. They should follow a healthy meal plan just like anyone else. However, with insulin regimens, the timing, amount, and content of foods need to be matched to the amount of insulin and physical activity. Children with diabetes do best if they can eat meals around the same time each day. Many need to eat a mid-morning and afternoon snack. Additional snacks may be needed before, during, or after exercise. For some children with diabetes, a missed or delayed meal or snack could result in hypoglycemia.



Children with diabetes may bring their own snacks to school each day, or their parents may ask to keep a supply of snack foods at school. Parents may ask to see lunch menus ahead of time to help plan insulin dosages. A quick-acting form of glucose, such

as glucose tablets or juice should be maintained at school, daycare, or wherever the child happens to be.

The child's parents will want to know in advance about any special activities that will change the child's usual eating schedule. A schedule change can usually be dealt with by adjusting the child's meal plan or insulin dose.

Parties & Special Events

Parents should be consulted about how they want the school or daycare to manage party foods with their child with diabetes. In the past, children with diabetes were told to limit foods containing sugar. But we now know that there is no food that a child with diabetes cannot eat, as long as it is scheduled into the meal plan.

Sports and Exercise

Children with diabetes can—in fact, they should—play games and sports. Everyone can benefit from regular physical activity. Exercise helps to lower blood glucose levels, maintain cardiovascular fitness, and control weight.

Regular exercise is important for all children, but has special implications for children with diabetes. A child with diabetes may need to eat a snack before, during, or after strenuous exercise. The child may also need to check blood glucose levels before taking part in a game or sport to determine when to eat a snack and how much food to eat. Just as with meal planning, children on some insulin regimens will do best if their gym class is about the same time every day.

Because children's lives involve a lot of spontaneous activity, it's a good idea for a child with diabetes to always keep snack foods nearby. People with diabetes should also always carry glucose tablets, juice, or another form of carbohydrate to treat hypoglycemia. Glucose should always be available and easily accessible to the child.

The timing of exercise may affect a child's meal plan and need for insulin. Parents should be notified in advance if the time of a game or sports event will change. Children with diabetes should not exercise if they are having symptoms of hypoglycemia or if blood glucose is so high that they have started to produce ketones. For more information on ketones, see page 10.

Hypoglycemia (low blood glucose)

Hypoglycemia occurs when blood glucose levels are below a child's target range, which can happen when:

- The body gets too much insulin or not enough food
- Meals or snacks are missed or eaten late
- The child gets more exercise than planned

Hypoglycemia is the most immediate danger for children with diabetes and is not always preventable. Hypoglycemia is usually mild and can be treated easily if recognized promptly. Most school-age children can tell when their blood glucose is low. Very young children who aren't aware of the symptoms or who can't communicate that they are feeling "low" need careful observation for subtle signs like daydreaming or irritability. Severe hypoglycemia, which is rare, may lead to combativeness, unconsciousness, or seizures and can be life threatening if not treated promptly.

Recognizing and Treating Hypoglycemia

Mild to moderate symptoms:

- Shakiness, trembling
- Pale skin
- Sweating
- Rapid pulse
- Hunger
- Irritability, crying
- Poor coordination
- Dizziness
- Fatigue, sleepiness
- Headache
- Slurred speech
- Lack of concentration, daydreaming

What to do for mild to moderate hypoglycemia:

- Do not leave child unattended
- Check blood glucose level
- Give child a fast-acting carbohydrate food or beverage, such as glucose tablets or gel, fruit juice, regular soda (not diet), sugar cubes, or hard candy.
- Check child's blood glucose level after 15 minutes
- Give another fast-acting carb if blood glucose is still too low.
- When child feels better, feed a meal or snack as soon as possible. If no meal or snack is scheduled, give child an

unscheduled snack once blood glucose levels have returned to target range.

- Give child time to recover. For example, a test should not be given right after an episode of hypoglycemia.

Severe Symptoms:

- Loss of consciousness
- Seizures
- Inability to swallow

What to do for severe hypoglycemia:

- Follow child's Diabetes Health Care Plan (DHCP)
- Have designated person give child a Glucagon injection per DHCP immediately and call for emergency medical assistance (9-1-1)
- Notify child's parents and physician immediately, according to the child's DHCP.

Instructions on dealing with hypoglycemia vary from child to child. Consult the child's DHCP for information specific to that child.

Hyperglycemia

Hyperglycemia occurs when blood glucose levels are above a child's target range, which can occur when:

- The body gets too little insulin, too much food, or decreased exercise
- The body is under stress from a cold, sore throat, or other illness
- The child is emotionally upset

Recognizing and Treating Hyperglycemia

Symptoms:

- Increased or excessive thirst
- Fatigue, weakness
- Increase in number of trips to the restroom
- Blurry vision
- Nausea

What to do:

- Follow the child's Diabetes Health Care Plan (DHCP)
- Check the child's blood glucose level
- Give sugar-free beverages (like water or diet soda)
- Allow free access to the restroom
- Give insulin if provided in child's DHCP
- Check for ketones (see below)
- Notify parents, according to the DHCP

Diabetic Ketoacidosis (DKA)

When the cells don't get enough glucose, the body starts to burn fat for energy, producing waste products called ketones. Very high levels of ketones cause a condition called ketoacidosis. Ketones can be detected with a simple urine or blood test. Follow a child's DHCP in checking ketones when symptoms of high blood glucose are present.

Ketoacidosis must be treated promptly. It can lead to a diabetic coma.

Recognizing and Treating Ketoacidosis

Symptoms:

- Abdominal pain
- Nausea
- Vomiting
- Fruity-smelling breath
- Dehydration (sunken eyes; dry, cracked lips)
- Drowsiness, labored breathing

What to do:

- Notify parents immediately, according to the DHCP
- Offer small amounts of sugar-free beverages (like water or diet soda)
- Provide free access to restroom
- Give an insulin injection for high blood glucose, as directed by the DHCP.
- According to the child's DHCP, emergency medical assistance may be required to transport the child to the hospital

Teamwork

The well being of a child with diabetes requires planning and cooperation among the child's parents, school staff, and other care providers. Key staff should be identified and trained in the basics of diabetes, including how to respond to high and low blood glucose levels. The goal should be to have a school nurse or other trained school staff person available during regular school hours and at all school events (e.g., before/after care, field trips, sports).

Age-related issues

Preschoolers

Preschool-age children with diabetes often have not learned to recognize the symptoms of low blood glucose, or they aren't able to tell others when they are feeling "low." So, it's important that they have frequent blood glucose checks.

Preschoolers are often frightened by fingersticks and insulin injections and may try to avoid or delay getting them. It may help to say: "Yes, I know it hurts" and "You're being very brave."



Stickers and stars help encourage a child to have a fingerstick or shot. Use positive reinforcements rather than scolding or threats of punishment.

Young children with diabetes can go through the same fussy eating phases as other children. It's usually best not to force a fussy child to eat. Have a variety of foods available. If the child rejects one food, offer something else, or offer juice or milk instead. Consult with the child's parents if "selective" eating becomes a pattern.

For more information, download a copy of our Print-On-Demand (POD) title, *Diabetes in Infants & Toddlers* from the American Diabetes Association Web site at www.diabetes.org. Or, call us at 1-800-DIABETES (342-2383) and we'll mail you a copy.

School-Age Children

School-age children want to be like their peers. The child with diabetes may feel different because of having to take insulin, check blood glucose regularly, and follow a meal plan. The best way to handle this will depend on the individual child's personality.

Some children will check their blood glucose or give themselves an insulin injection for show-and-tell. Older children have presented science projects on diabetes and its care. However, a child who is shy or sensitive about having diabetes may not wish to be singled out in this way. Take cues from the child on how to handle his or her diabetes. Be sure to respect the student's privacy rights.

School staff can help the child with diabetes by working with the family to find ways to fit diabetes care into the school schedule and making any necessary changes without calling undue attention to the child with diabetes.

Teenagers

For the teenager with diabetes, having to take insulin, check blood glucose, and follow a meal plan is tiresome and can compound the normal difficulties of adolescence. It is typical behavior for a teen with diabetes to ease up on diabetes care and try to act like everyone else.

Sometimes, an adult outside the family with whom a teenager has a good relationship, such as a teacher or coach, can help to provide the teenager with the support he or she needs. Smoking, drinking alcohol, and using illegal drugs all pose special risks for people with diabetes. Nevertheless, some teens with diabetes will engage in these activities. Presenting the facts in a nonjudgmental way and showing the teenager that you expect him or her to act responsibly can help.

Summary of Key Points

Good diabetes care practices include:

- Eating healthful foods according to meal plan
- Checking blood glucose levels regularly
- Taking medication (insulin or pills) as prescribed in the child's diabetes management plan
- Exercising regularly

Diabetes care should be flexible and individualized.

Diabetes is not contagious.

Resources:

The National Diabetes Education Program's guide, *Helping the Student with Diabetes Succeed: A Guide for School Personnel* is a comprehensive explanation of diabetes care at school. For your free copy, visit www.ndep.nih.gov

The American School Health Association (ASHA) and American Diabetes Association publication, *Health in Action: Diabetes and the School Community*, is a great resource for you and your school. For more information call ASHA at 1-800-445-2742.

Wizdom kit. Wizdom is the free kit of wit and wisdom for kids with diabetes (and their families). Check with your students with diabetes to see if they have a Wizdom kit. If not, request one for them. Simply email wizdom@diabetes.org or call us at 1-800-DIABETES (342-2383).

Obtain school diabetes care information and download a sample Diabetes Health Care Plan from the American Diabetes Association Web site at www.diabetes.org/advocacy/school.

Visit us online at www.diabetes.org for more information.

E-mail wizdom@diabetes.org with questions or for more information

Call **1-800-DIABETES** (342-2383) for general information or to receive information in the mail