

2. What Should Advocates Know About Diabetes?

Often a school district's failure to properly address the needs of a student with diabetes is due not to bad faith, but to ignorance or a lack of accurate information about diabetes. Advocates therefore may need to educate district personnel about the disease and its treatment. This section can serve as a starting point for educating advocates or school personnel. It provides only basic information about diabetes; advocates who need more detailed information should consult the Association's web site.

2.1 What is diabetes?

Diabetes is a serious chronic disease that impairs the body's ability to use food for energy and results in high levels of glucose (or sugar) in the blood. Diabetes can lead to both short-term and long-term complications. Short-term problems can include high (hyperglycemia) or low (hypoglycemia) blood glucose levels that significantly affect the student's ability to concentrate and learn, and can cause serious immediate consequences such as brain damage or death if not treated. In addition, diabetes can cause serious complications that develop over time (such as vision problems and kidney disease), but people with diabetes can take steps to control the disease and lower the risk of complications.

More information about diabetes can be found on page 6 of *Helping the Student with Diabetes Succeed: A Guide for School Personnel*, published by the National Diabetes Education Program (NDEP) (see Question 1.5). Advocates can also consult the Association's web site or call 1-800-DIABETES for more information. However, it is very important for an advocate to be familiar with the child's own diabetes and treatment regimen. This information is best obtained from the child, the child's parents or guardians, and the child's health care provider. Because many aspects of advocacy require an individualized evaluation of the child and circumstances, a thorough familiarity with the child's specific situation is essential.

2.2 What are the types of diabetes?

There are two main types of diabetes that can affect children. Type 1 diabetes was previously called insulin-dependent diabetes mellitus or juvenile-onset diabetes. Type 1 develops when the body's immune system destroys pancreatic beta cells, the only cells in the body that make insulin. Insulin is the hormone that allows glucose in the bloodstream to enter the cells of the body, where it can be converted into energy. This form of diabetes usually strikes children and young adults, although the disease can develop at any age. In order to survive, people with type 1 diabetes must have insulin delivered by injections or a pump and this insulin must be carefully balanced with food intake and physical activity.

Type 2 diabetes was previously called non-insulin-dependent diabetes mellitus or adult-onset diabetes. It usually begins as insulin resistance, a disorder in which the cells do not use insulin properly. Type 2 diabetes is increasingly being diagnosed in children and adolescents. Some people with type 2 diabetes may control their blood glucose levels through diet and exercise. Others are required to take oral medications, insulin, or both.

Gestational diabetes is a form of glucose intolerance that is diagnosed in some women during pregnancy. During pregnancy, gestational diabetes requires treatment to normalize maternal blood glucose levels to avoid complications in the infant. After pregnancy, gestational diabetes generally disappears, although women who have had it are more likely to develop type 2 diabetes later in life.

The term “brittle” diabetes is sometimes used, although its use is no longer preferred. “Brittle” diabetes refers to unpredictable highs and lows, often within very short periods of time, as a result of even small changes in activity, nutrition, or insulin usage.

More information on the types of diabetes can be found on pages 11-14 of *Helping the Student with Diabetes Succeed* (see Question 2.1).

2.3 How does diabetes affect a student?

It is important to understand the effect diabetes has on a particular student and how that student’s diabetes is treated. Diabetes is a disability and can have substantial impacts on a student’s academic performance and safety at school, but it does not affect all students in the same ways. Diabetes can affect students in several ways:

First, diabetes must be managed 24 hours a day, 7 days a week. Diabetes care requires an ongoing treatment regimen, as discussed in the next two questions. The treatment regimen affects the child’s daily schedule and, if appropriate provisions are not made, may impact the ability of the child to have equal access to all school-related activities.

Second, blood glucose levels that are not kept in target range may result in hypoglycemia (see Question 2.7) or hyperglycemia (see Question 2.8). Hypoglycemia is the most common and immediate concern for school-aged children. Severe hypoglycemia can result in loss of consciousness and is life-threatening. Both hyperglycemia and hypoglycemia can affect a student’s cognitive functioning and, thus, school performance.

Finally, even where blood glucose levels are maintained within reasonably acceptable ranges fluctuations can affect a student’s ability to concentrate and learn. In addition, diabetes may have an adverse impact upon the ability of a student to provide self-care or to engage in daily living tasks such as eating, communicating, or even walking. Effective diabetes care is essential for a student’s immediate safety and ensures a student will be able to participate in all school activities.

2.4 What are the typical regimens for treating type 1 diabetes?

Type 1 diabetes requires the daily balancing of insulin, nutrition, and physical activity. Each impacts a child’s blood glucose levels.

Insulin comes in several types and can be administered in different ways (see Question 2.6). Some children take predetermined doses of insulin at specific times; these children often must maintain rather strict eating schedules and amounts, regularly eat snacks, monitor

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activities, and make adjustments when any of these change to avoid hyperglycemia or hypoglycemia. Other children are now treated with an insulin regimen which attempts to maintain a steady level of insulin throughout the day through a continuous delivery of basal insulin. These regimens may reduce the need for snacks and provide greater flexibility as to when meals must be consumed.

Where a student's diabetes is treated with insulin, it is extremely important to check blood glucose levels at set times and whenever hypoglycemia or hyperglycemia is suspected, and to respond to levels that are too high or too low as quickly as possible. More frequent checking of blood glucose levels may be needed for students using an insulin pump.

More information on diabetes treatment and management (type 1 and type 2) can be found on pages 33-49 of *Helping the Student with Diabetes Succeed* (see Question 1.5).

2.5 Does the treatment for type 2 diabetes differ from type 1 diabetes?

Type 2 diabetes can have a wide variety of effects on different individuals, depending on the severity of insulin resistance and the length of time the person has had diabetes. Sometimes it can be treated with proper diet and exercise, without the need for medications. Other students may need to take oral medications to control their diabetes, and some require insulin injections. Children with type 2 diabetes, particularly those using insulin, need to closely monitor blood glucose levels and treat symptoms of high or low blood glucose, just as students with type 1 diabetes do. Some types of oral medications other than insulin used to treat type 2 diabetes (called insulin secretagogues) may cause hypoglycemia, while other oral medications generally do not. Knowing a type 2 child's medication regimen is important to understanding the impact of his or her diabetes.

More information on diabetes treatment and management (type 1 and type 2) can be found on pages 33-49 of *Helping the Student with Diabetes Succeed* (see Question 1.5).

2.6 How is insulin administered?

Insulin must be injected into the body so that it reaches the bloodstream; it generally cannot be ingested or taken in pill form. There are different types of insulin, which vary in the speed with which they begin to lower blood glucose and the length of time they are effective. Individuals may take only one type of insulin, or a combination of several types, based on a doctor's instructions.

There are a number of ways that insulin can be administered, including injections with a lancet, insulin pens, and insulin pumps. The administration method used by a child may depend on that child's age, health needs, and preferences.

More information on insulin can be found on pages 44-49 of *Helping the Student with Diabetes Succeed* (see Question 1.5).

2.7 What is hypoglycemia and how is it treated?

Hypoglycemia, also called "low blood glucose" or "low blood sugar," occurs when a student's blood glucose level falls too low. Hypoglycemia is typically caused by administering too much insulin, skipping or delaying meals or snacks, eating too little food, exercising too

long or too intensely. Hypoglycemia is the most common and immediate concern for school-aged children.

Hypoglycemia usually can be treated easily and effectively. If it is not treated promptly, however, hypoglycemia can become severe and lead to unconsciousness and convulsions and can be life-threatening. Symptoms of mild to moderate hypoglycemia include tremors, sweating, lightheadedness, irritability, confusion, and drowsiness. Symptoms of severe hypoglycemia include inability to swallow, convulsions or unconsciousness.

Mild to moderate hypoglycemia can be treated by promptly ingesting a quick-acting source of carbohydrates (such as hard candy, juice, or glucose tablets). After treatment, blood glucose levels should be rechecked in 10-15 minutes, and more carbohydrates administered until the student's blood glucose levels return to target levels.

When severe hypoglycemia occurs, the person cannot ingest or swallow anything and should never be given food or drink. Instead, glucagon should be administered and emergency personnel contacted. Glucagon is a hormone that raises blood glucose levels by causing the release of glycogen (a form of stored carbohydrate) from the liver. Although it may cause nausea and vomiting when the student regains consciousness, glucagon can be a lifesaving treatment that cannot harm a student.

More information on hypoglycemia and its treatment can be found on pages 36-41 of *Helping the Student with Diabetes Succeed* (see Question 1.5).

2.8 What is hyperglycemia and how is it treated?

Hyperglycemia, also called "high blood glucose" or "high blood sugar," occurs when the body gets too little insulin, food that is not covered by insulin, or too little exercise; it may also be caused by stress, menses, injury or an illness such as a cold. The most common symptoms of hyperglycemia are thirst, frequent urination, fatigue, and blurry vision. If left untreated, hyperglycemia can lead to a serious condition called diabetic ketoacidosis (DKA); characterized by nausea, vomiting, and a high level of ketones in the urine. DKA can be life-threatening and, thus, requires immediate medical attention.

Treatment of hyperglycemia may involve drinking extra water or diet drinks or administering supplemental insulin. The student's blood glucose level should be monitored closely until it returns to the target range.

More information on diabetes treatment and management (type 1 and type 2) can be found on pages 41-44 of *Helping the Student with Diabetes Succeed* (see Question 1.5).

2.9 What are the dietary needs of children with diabetes?

The nutritional needs of a student with diabetes do not differ from the needs of a student without diabetes. Both should eat a variety of foods to maintain normal growth and development. The major difference for children who use insulin is that the timing, amount, and content of the food that the student with diabetes eats are carefully matched to the dosage and peak action of the insulin. The student's meal plan is designed to balance nutritional needs with the insulin regimen and physical activity level. There are usually no forbidden foods for people with diabetes.

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More information on nutrition and diet can be found on pages 50-54 of Helping the Student with Diabetes Succeed (see Question 1.5).