



Diabetes Care in the School Setting: A Position Statement of the American Diabetes Association

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Diabetes is one of the most common chronic diseases of childhood (1). There are approximately 200,000 individuals <20 years of age with diabetes in the U.S. (2). The SEARCH for Diabetes in Youth (SEARCH) study recently reported that 1.93 per 1,000 (aged <20 years) were diagnosed with type 1 diabetes, an increase of 21% from 2001 to 2009. Increases in the prevalence of type 1 diabetes were seen in all ethnic groups, but non-Hispanic whites were disproportionately affected. Because type 2 diabetes rarely occurs in younger children, its prevalence in the population aged <20 years is not readily available. For type 2 diabetes in youth between 10 and 20 years of age, the SEARCH study reported a prevalence of 0.46 per 1,000 youth of all ethnicities, an increase of 31% from 2001 to 2009 (3). These statistics demonstrate the rising prevalence of diabetes in children and the increased need for diabetes management.

The majority of young people with diabetes spend many hours at school and/or in some type of child care program. Trained and knowledgeable staff are essential to provide a safe school and child care environment for children with diabetes. This includes the provision of care during the school day, field trips, and all school-sponsored activities in the school setting and in preschool, day care, and camp programs in the child care setting. Staff play a critical role in helping to reduce the risk of short- and long-term complications of diabetes and ensuring that children are well-positioned for academic success and normal growth and development. The child's parents/guardians and health care provider(s) should work together to provide school systems and child care providers with the information necessary to enable children with diabetes to participate fully and safely in the school and child care setting experiences (4–6).

The purpose of this position statement is to provide the diabetes management recommendations for *students with diabetes in the elementary and secondary school settings* based on the American Diabetes Association's (ADA's) "Standards of Medical Care in Diabetes—2015" (6) and "Type 1 Diabetes Through the Life Span: A Position Statement of the American Diabetes Association" (7). For information on young children aged <5 years, ADA's position statement "Care of Young Children With Diabetes in the Child Care Setting" (8) should be reviewed for specific recommendations for settings such as day care centers, preschools, camps, and other programs.

DIABETES AND THE LAW

Federal laws that protect children with diabetes include Section 504 of the Rehabilitation Act of 1973 (9), the Individuals with Disabilities Education Act (10), and the Americans with Disabilities Act (11). Under Section 504 and the Americans with Disabilities Act, diabetes is considered a disability. It is illegal for schools to discriminate against students with disabilities including diabetes. Any school that receives federal funding—public, charter, private, and parochial schools and postsecondary institutions—or any facility considered open to the public must reasonably accommodate the special needs of students with diabetes. Indeed, federal law requires an individualized assessment of any child with diabetes. The required accommodations should be documented in a written plan developed under the applicable federal law such as a Section 504 Plan or Individualized Education Program (IEP).

In addition to federal laws, many diabetes-specific state laws provide protections that enable school staff to provide care. Some states have laws that prevent non-nurse school staff from administering medications such as insulin and glucagon.

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Regardless of state laws, federal law requirements must always be met so that students with diabetes have access to the care they need to be safe and able to fully participate in all school-sponsored activities such as before-school breakfast programs, recess, after-school clubs, sports, detention, and school dances (12–14).

These laws help to ensure that the needs of students with diabetes are provided for within the usual school setting with as little disruption to the school's and the student's routine as possible. The laws also ensure that the student is able to fully participate in all school activities (13–15). Despite these protections, students with diabetes still face discrimination at school. For example, students may not receive the assistance necessary to monitor blood glucose and administer insulin and may be prohibited from eating needed snacks in the classroom. Some schools may require a student to attend a different school from his or her assigned school in order to receive the diabetes care he or she needs. The ADA works to prevent such discriminatory practices and to ensure the safe and fair treatment of students with diabetes in the school setting (15–18).

Key Points

- Federal and some state laws provide legal protections for students with diabetes in the school setting.
- Some states have laws preventing nonnurse school staff from administering medications such as insulin and glucagon.
- Required accommodations should be documented in a written plan under applicable federal law.
- Despite federal and state laws, students with diabetes still face discrimination, potentially jeopardizing their health and safety and making it difficult for them to safely participate in school-sponsored activities.
- The ADA works to ensure the safe and fair treatment of children with diabetes in the school setting.

DIABETES CARE IN SCHOOLS

Appropriate diabetes care in the school is necessary for the student's immediate safety, long-term well-being, and optimal academic performance. The Diabetes Control and Complications Trial (DCCT) showed a significant link between blood

glucose control and later development of diabetes complications in children as young as 13 years of age, with improved glycemic control decreasing the risk of complications (19,20). To achieve glycemic control, a child must check blood glucose levels frequently, follow a healthy meal plan, take insulin/medications, and engage in regular physical activity. Insulin is administered by multiple daily injections or with an insulin infusion pump. Crucial to achieving glycemic control is an understanding of the effect of diet, physical activity, and insulin on blood glucose levels.

To facilitate appropriate care, the school nurse and other school staff must have an understanding of diabetes and be trained to manage daily diabetes-specific tasks as well as to manage diabetes emergencies (4,5,8,21–31). Knowledgeable and trained school staff are essential if the student is to avoid the immediate health risks of low and high blood glucose and to achieve the glycemic control required to decrease risks for later development of diabetes complications (5,23). Studies have shown that the majority of school staff members have an inadequate understanding of diabetes (23,24). Consequently, diabetes education must be targeted toward teachers and other school staff who interact with the student, including school nurses, administrators, coaches, health aides, bus drivers, secretaries, etc. (4,25,26,28). Current ADA recommendations and resources regarding appropriate care for students with diabetes are available to all school staff (4,26).

Key Points

- Students with diabetes must receive appropriate care in the school setting to reduce the risk of short- and long-term complications.
- The school nurse and other school staff need to be trained to meet the needs of students with diabetes.

GENERAL GUIDELINES FOR DIABETES CARE AT SCHOOL

Diabetes Medical Management Plan

An individualized Diabetes Medical Management Plan (DMMP) should be developed by the student's health care provider in collaboration with the student and parent/guardian to set out the student's diabetes management needs during the school day and at all school-sponsored activities. Inherent in this process are delineated responsibilities

assumed by all parties, including the parent/guardian, the school staff, and the student (4,27,32). These responsibilities are outlined in this position statement. In addition, the DMMP should be used as the basis for the development of written education plans such as the Section 504 Plan or the IEP. The DMMP should address the specific needs of the student and provide specific instructions for each of the following:

1. Blood glucose monitoring, including the frequency and circumstances requiring blood glucose checks, and use of continuous glucose monitoring, smartphone and smartwatch applications, or other technology, if applicable.
2. Insulin administration (if necessary) using the student's preferred insulin delivery system, including doses/injection times prescribed for specific blood glucose values and for carbohydrate intake, the storage of insulin, and, when appropriate, physician authorization of parent/guardian adjustments to insulin dosage.
3. Meals and snacks, including food content, amounts, and timing.
4. Symptoms and treatment of hypoglycemia (low blood glucose), including the administration of glucagon if recommended by the student's health care provider.
5. Symptoms and treatment of hyperglycemia (high blood glucose), including the administration of insulin if recommended by the student's health care provider.
6. Checking for ketones and appropriate actions to take for abnormal glucose and ketone levels, if requested by the student's health care provider.
7. Participation in physical activity.
8. Emergency evacuation/school lockdown instructions and emergency contacts and plans.

A sample DMMP (<http://professional.diabetes.org/DMMP>) may be accessed online and customized for each individual student. For detailed information on the symptoms and treatment of hypoglycemia and hyperglycemia, refer to *Medical Management of Type 1 Diabetes* (33). A brief description of diabetes targeted to school staff is included in the Supplementary Data; it may be helpful to include this information as an introduction to the DMMP.

Responsibilities of the Various Stakeholders

The Parent/Guardian Should Provide the School With the Following:

1. All materials, equipment, supplies (meter, test strips, lancets, lancing device), insulin (backup syringes, pump supplies, etc., if needed), and other medication necessary for diabetes management, including blood glucose monitoring, insulin administration (if needed), glucose tablets, glucagon emergency kit, urine or blood ketone monitoring, and food/snacks. The parent/guardian is responsible for the maintenance of the blood glucose monitoring equipment (i.e., cleaning and performing controlled testing per the manufacturer's instructions) and must provide materials necessary to ensure proper handling and disposal of materials. An appropriate record-keeping system should be maintained at school, enabling staff or student to record blood glucose and ketone results; blood glucose values should be transmitted to the parent/guardian for review and presented in the DMMP. Some students maintain a record of blood glucose results in the meter memory or through other electronic means.
2. The DMMP completed and signed by the student's health care provider.
3. Supplies to treat hypoglycemia, including glucose tablets or a source of quick-acting carbohydrate and a glucagon emergency kit.
4. Information about diabetes and the performance of diabetes-related tasks such as blood glucose monitoring and insulin administration.
5. Current emergency phone numbers for the parent/guardian and the student's health care provider so that the school, with parental consent, can contact these individuals with diabetes-related questions and/or during emergencies.
6. Information about the student's meal/snack schedule. The parent should work with the school before the beginning of the school year or before the student returns to school after the diagnosis to coordinate this schedule with that of the other students as closely as possible. Instructions should be given for situations when food is provided during school parties and other activities.

7. In most locations, and increasingly, a signed release of confidentiality limited to diabetes-related care will be required so that the health care provider can communicate with the school. Copies should be retained both at the school and in the health care provider's offices.

The School Should Provide the Following:

1. Opportunities for the appropriate level of ongoing training and diabetes education for the school nurse and school district health care coordinators.
2. Training for school staff as follows (4):
 - a. **Level 1** training for all school staff members, which includes a basic overview of diabetes, typical needs of a student with diabetes, recognition of hypoglycemia and hyperglycemia, and the contact information for help.
 - b. **Level 2** training for school staff members who have responsibility for students with diabetes, which includes all content from level 1 plus recognition and treatment of hypoglycemia and hyperglycemia and required accommodations for those students.
 - c. **Level 3** training for a small group of school staff members who will perform student-specific routine and emergency care tasks such as blood glucose monitoring, insulin administration, and glucagon administration when a school nurse is not available to perform these tasks. This will also include level 1 and level 2 training.
3. Immediate accessibility to the treatment of hypoglycemia by a knowledgeable adult. The student should remain supervised until appropriate treatment has been administered, and the treatment should be available as close to where the student is as possible.
4. Accessibility to scheduled insulin at times set out in the student's DMMP and immediate accessibility to treatment for hyperglycemia including insulin administration as set out by the student's DMMP.
5. A location at school that allows privacy during blood glucose monitoring and insulin administration, if desired by the student and family, or permission for the student to

check his or her blood glucose level and take appropriate action to treat hypoglycemia and hyperglycemia in the classroom or anywhere the student is in conjunction with a school activity, if indicated in the student's DMMP.

6. School nurse and trained school staff who can check blood glucose and ketones and administer insulin, glucagon, and other medications as indicated by the student's DMMP.
7. School nurse and trained school staff responsible for the student who are aware of the student's meal and snack schedule and work with the parent/guardian to synchronize this schedule with that of the other students. This individual will also notify the parent/guardian in advance of any expected changes in the school schedule that affect the student's meal times or exercise routine and will remind young children of snack times.
8. Permission for self-sufficient and capable students to carry equipment, supplies, medication, and snacks and to perform diabetes management tasks anywhere and at any time.
9. Permission for the student to have smartphone or other technology and direct communication access to reach the parent/guardian and health care provider and document treatment.
10. Permission for the student to see the school nurse and other trained school staff as often as requested.
11. Permission for the student to eat a snack anywhere, including the classroom or the school bus, if necessary to prevent or treat hypoglycemia.
12. Permission to miss school without consequences for illness, diabetes management, and required medical appointments to monitor the student's diabetes management. This should be an excused absence with a doctor's note, if required by usual school policy.
13. Permission for the student to use the restroom and have access to fluids (i.e., water) as necessary.
14. An appropriate location for insulin and/or glucagon storage, if necessary.

15. A plan for the disposal of sharps based on an agreement with the student's family, local ordinances, and Standard Precautions.
16. Information on serving size and caloric, carbohydrate, and fat content of foods served in the school (34).

The school nurse should be the key coordinator and provider of care. The school nurse and/or other qualified health care professional with expertise in diabetes should work with the school principal or other school administrator to identify school personnel who are willing and volunteer to be trained to provide care, and to coordinate the training of an adequate number of school staff as specified above. It is the school's responsibility to provide appropriate training to an adequate number of school staff on diabetes-related tasks and in the treatment of diabetes emergencies. This training should be provided by the school nurse or another qualified health care provider with expertise in diabetes. The school must ensure that if the school nurse is not present, at least one trained school employee be available to perform these procedures in a timely manner while the student is at school; on field trips; participating in school-sponsored extracurricular activities such as prebell breakfast programs, intramural sports, after-school clubs, detention, and school dances; and on transportation provided by the school. This is needed in order to enable full and safe participation in school activities (4,23). These school staff need not be health care professionals (4,14,22,28,30). Parents/caregivers should be made aware of the individuals who are being informed about the student's diabetes diagnosis (and permission sought if possible) in an effort to protect privacy.

Student's Role and Responsibilities

A student should be allowed to provide his or her own diabetes care at school to the extent that is appropriate based on the student's development and his or her experience with diabetes. The extent of the student's ability to participate in diabetes care should be agreed upon by the parent/guardian, the student's health care provider, and school staff. The ages at which a child is able to successfully perform self-care tasks vary and depend on the individual. A child's capabilities and willingness to provide self-care should be assessed and respected.

1. *Young children (<5 years of age):* unable to perform diabetes tasks independently and will need an adult to provide all aspects of diabetes care. Many younger children will have difficulty in recognizing hypoglycemia, so it is important that school staff recognize and provide prompt treatment. However, children in this age range can often choose which finger to prick and select an injection site and are generally cooperative. ADA's position statement on child care "Care of Young Children With Diabetes in the Child Care Setting" (8) should be reviewed for more information.
2. *Elementary students:* depending on the duration of diabetes and level of maturity, may be able to perform their own blood glucose checks, but usually will require supervision. Older elementary students are generally beginning to self-administer insulin with supervision and understand the effect of insulin, physical activity, and nutrition on blood glucose levels. Unless the child has hypoglycemia unawareness, he or she should usually be able to let an adult know when experiencing low blood glucose.
3. *Middle school- and high school-aged students:* are usually able to self-manage their diabetes depending on the duration of diabetes and level of maturity but will always need help when experiencing severe hypoglycemia. Independence in older youth should generally be encouraged to enable the student to engage in his or her decisions about his or her own care.

Students' competence in and capability of performing diabetes-related tasks are presented in the DMMP and then adapted to the school setting. Individuals with diabetes of any age may require assistance to perform a blood glucose check when blood glucose is low. In addition, individuals experiencing low blood glucose may need a reminder to eat or drink and should never be left unsupervised until such treatment has taken place and the blood glucose value has been rechecked and returned to the normal range. Ultimately, each person with diabetes becomes responsible for all aspects of routine care, and it is important for school staff to facilitate a student in reaching this goal. Regardless of a student's ability to provide

self-care, help will always be needed in the event of a diabetes emergency.

Key Points

- Diabetes care at school should be provided in accordance with the regimen prescribed in the student's DMMP.
- Parents/guardians, the school, the health care provider, and the student all have a role and responsibilities in the provision of diabetes care at school.
- Regardless of a student's ability to provide self-care, adult supervision will be required in the event of a diabetes emergency.
- The ADA has a wealth of comprehensive resources to aid in the training of school employees in the provision of diabetes care to students (www.diabetes.org/safeatschool).

DIABETES MANAGEMENT AT SCHOOL: SPECIAL CONSIDERATIONS

Self-management

Many students can self-manage their diabetes, whereas others need some supervision. Other students need to have diabetes care provided by a school nurse and/or a trained staff member. All students, even those who can independently manage their diabetes, will need assistance in the event of a diabetes emergency.

It is best to monitor blood glucose levels according to plan and respond to the results as quickly and conveniently as possible. A delay in monitoring and treatment could result in a diabetes emergency and contribute to short-term diabetes-related complications, so prompt action is paramount. This also minimizes educational problems caused by missing instruction in the classroom as a result of a delayed treatment.

Insulin/Medication Administration

Students with type 1 diabetes and some students with type 2 diabetes need insulin at specified times at school with additional doses to cover hyperglycemia when indicated. The school nurse and trained school staff should be trained on using the student's insulin delivery system (e.g., syringe, insulin pen, or insulin "pump").

Recognition and Treatment of Hypoglycemia and Hyperglycemia

The school nurse and school staff should be made aware of the symptoms and

signs of hypoglycemia and hyperglycemia and be trained to provide prompt treatment including the administration of glucagon to treat severe hypoglycemia and insulin to treat hyperglycemia.

Nutrition and Physical Activity

The general nutritional needs of students with diabetes should not differ from the needs of other students. However, there may be differences in the timing, amount and nutrient content of the food, and attention given to ensure carbohydrates are carefully matched to balance insulin action. The school needs to provide the carbohydrate content and nutritional information for school meal menus in advance. Students with diabetes should fully participate in physical education classes and team/individual sports. Students may need to adjust their insulin and food intake during extra physical activity, and a fast-acting source of carbohydrate should be readily available to treat hypoglycemia.

Field Trips and Extracurricular Activities

Students with diabetes should be able to participate in field trips and extracurricular activities such as before-school breakfast programs, intramural sports, after-school clubs, detention, and school dances where they will have access to their supplies and the school nurse or trained school staff who can provide diabetes care. Parental attendance cannot be required for the student's participation.

Attendance/Absenteeism

Children with diabetes should attend school regularly. It is important that absences happen only when they are medically necessary such as illness or medical appointments. Efforts should be made to schedule appointments to minimize class absences. When absences occur, there should not be unfair consequences for missing class time.

Academics and Standardized Testing

Standardized testing and licensing agencies are prohibited from discriminating against otherwise qualified individuals with disabilities under the Americans with Disabilities Act. This includes students with diabetes. Agencies must provide reasonable modifications to such individuals. Applicants taking a variety of scholastic exams (e.g., SAT, ACT, etc.) may request reasonable modifications in the administration of these exams,

including access to self-monitoring equipment, medications, and food.

Key Points

- Independent and mature students should be permitted to self-manage their diabetes anywhere, anytime and to be able to carry their supplies, medication, and equipment.
- Insulin may be administered by self-managing students, a school nurse, or trained school staff using the student's recommended insulin delivery device. The school nurse and trained school staff should be knowledgeable about the symptoms of hypoglycemia and hyperglycemia and be prepared to treat including the administration of glucagon.
- All students, even those who can independently manage their diabetes, will need assistance in the event of a diabetes emergency.
- Carbohydrate and nutrition information for school meals should be provided to the family in advance.
- Students should be permitted to participate in all school-sponsored activities with the school nurse or other trained school staff available to provide diabetes care.
- Students with diabetes should not be penalized for absences related to diabetes.
- Reasonable modifications by testing agencies should be provided to students with diabetes for standardized tests.

OTHER SETTINGS

Preschool Setting

Young children with diabetes have unique needs and require a carefully thought-out, proactive diabetes care plan. Federal laws and some state laws provide protections for the rights of the young child in the preschool setting. ADA's position statement on child care "Care of Young Children With Diabetes in the Child Care Setting" (8) should be reviewed for specific recommendations for children aged <5 years in the child care setting.

Postsecondary Setting

Students with diabetes are protected under Section 504 and the Americans with Disabilities Act. Students may request reasonable modifications from the institution's office of disability. A written accommodation plan or letters of accommodation may be developed to give professors notice that certain modifications should be provided. ADA's

"Going to College With Diabetes: A Self-advocacy Guide for Students" (35) should be reviewed for specific recommendations for postsecondary students with diabetes.

Key Points

- Reasonable modifications under federal and state laws should be made to students in preschool and postsecondary settings.

SUMMARY

Diabetes is a common chronic disease in school-aged children. Short- and long-term diabetes-related complications can be delayed or prevented with proper management. Diabetes must be managed 24 h a day, 7 days a week, including the many hours spent at school. To keep students with diabetes safe at school, guarantee long-term health, prevent complications, and ensure full participation in all school activities, proper monitoring of and responding to blood glucose levels must be attended to throughout the school day and during all school-sponsored activities. Coordination of care among the family, school, and diabetes health care provider is critical. With proper planning and the education and training of school staff, children and youth with diabetes can fully and safely participate in school.

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