

## **HELPING STUDENTS WITH DIABETES THRIVE IN SCHOOL**

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### **Abstract:**

This article reviews many of the common challenges encountered in the care of the student with diabetes at school with regard to blood glucose monitoring, insulin administration, nutrition management, exercises and sports, management of hypo- and hyperglycemia, and training of school personnel and proposes solutions in each of these areas.

### **Introduction**

Living with diabetes requires round-the-clock management. For the child with diabetes, much of the day is spent in the school setting and out of the immediate reach of family caregivers. Given the findings of the Diabetes Control and Complications Trial (1) and the United Kingdom Prospective Diabetes Study (2), glycemic control can no longer be ignored during the school day as it once was with regard to long-term complications.

However, more immediate concerns exist:

- Protecting the safety of students with diabetes by minimizing hypoglycemia and preventing diabetic ketoacidosis
- Ensuring that students with diabetes are ready to learn and to participate fully in school activities.
- Minimizing the possibility that diabetes-related emergencies will disrupt classroom activities.
- Promoting normal physical and emotional growth and development (3).

As diabetes health care professionals, we often are called upon to help ensure the student with diabetes has the necessary information and support to carry out the diabetes care plan in the school setting. Each student should have a document, typically known as the "Diabetes Medical Management Plan" (DMMP), which outlines the required elements of care. The DMMP is signed by the diabetes care provider and parent. Some students may additionally have a 504 Accommodation Plan which outlines in detail how necessary accommodations will be achieved. An Individualized Education Plan (IEP) is used if learning is chronically impaired by diabetes.

While our primary responsibility is to advocate for the child with diabetes, it is also important to understand the challenges facing school caregivers in carrying out the plan and to help devise workable solutions. It is also crucial for us to remind students and parents of their roles in this endeavor.

### **Components of Diabetes Care at School**

The key components of diabetes care at school have been outlined in both the American Diabetes Association's position statement "Diabetes Care in the School and Day Care Setting" (3) and the NDEP publication "Helping the Student with Diabetes Succeed: A Guide for School Personnel" (4) as well as in many other publications. Some of the

common challenges encountered with implementation of the specific components outlined and ideas for overcoming them are outlined below.

### Blood Glucose Monitoring

#### Challenges:

Most children with diabetes need to monitor blood glucose levels at school at least once a day at lunchtime. Depending on the school's layout, expecting the student to go to a centralized clinic or office may be unsafe or may result in excess time out of class.

TABLE 1- Possible Reasons For Extra Blood Glucose Checks At School:

- Returning to school after diagnosis to establish patterns
- Beginning a new physical activity at school
- Beginning intensive therapy to fine tune insulin doses
- Experiencing signs or symptoms of hypo- or hyperglycemia.
- Preparing to take an academic exam or test

#### Solutions:

Students with diabetes should be allowed to check blood glucose in the classroom at their desks during suspected hypoglycemia or any other time when going elsewhere will cause unnecessary delays in treatment (5). If the student desires privacy for routine tests, a private spot adjacent to the classroom may need to be provided. Sometimes having the student wait to test at his/her desk as the other students are leaving class for lunch may satisfy this need.

### Insulin Therapy

#### Challenges:

One of the most challenging aspects of diabetes management at school is making sure students have access to insulin, particularly at lunchtime. This can be especially problematic for younger, inexperienced, or developmentally delayed students who are unable to give their own insulin injections or insulin pump boluses if no one at school is trained and/or allowed to administer insulin (6,7,8). In these instances, some parents have had no choice but to go to the school to give an injection or administer a bolus if the child needed insulin. Unfortunately, employers are not always tolerant of this situation.

Middle-school students usually have all the skills necessary to perform their own injections but often need supervision to ensure they administer the insulin to themselves. Insulin injections in most cases should be given under adult supervision in an agreed-upon location. By the time most students with diabetes reach high school, they are able to perform the bulk of their diabetes self-care except during some hypoglycemic episodes.

Solutions: In elementary schools, at least two individuals should be trained to give insulin injections or administer a bolus dose for a pump user and/or supervise the student in self-administration. This individual could be a licensed nurse, a trained health room assistant, or another trained volunteer. The delegation of healthcare tasks at school to unlicensed personnel may be governed by the state's nurse practice act.

In some states or school districts, use of insulin pens rather than syringes by unlicensed school health personnel is preferred. Pens often make it easier both for unlicensed staff and the young student to learn to give insulin. Pen needle removers and retractable pen needles alleviate concerns about accidental needle-sticks.

“Smart” insulin pumps make it easier and less intimidating for school health staff to assist a young student with insulin bolus administration. Dose calculations are done by the pump and can be verified by phone with the parent as desired. Insulin pump companies happily send certified pump trainers to schools to assist with training. Most also have web-based interactive tutorials, CD ROMs, and videos. Interactive tutorials are also available online for learning to use an insulin pen.

### Nutrition Management

#### Challenges:

Many students with diabetes participate in school nutrition programs. All students deserve access to healthy, well-balanced meals, but students with diabetes may need special accommodations. Parents sometimes have trouble getting nutrition information about foods served and portion sizes from their child’s school. This makes it difficult to plan ahead whether using a constant carbohydrate approach or insulin to carbohydrate ratio.

Younger children may need school staff to help with serving sizes, monitoring of actual intake at meals, and/or supervision to prevent inappropriate food exchange with classmates.

Timing of meals and snacks at school may also pose problems as lunch periods can span more than 3 hours in larger schools. While insulin and snack regimens usually can be modified to accommodate early or late lunch periods, rotating lunch schedules are especially difficult to manage. Long delays in lunch lines, especially if the student has just been treated for hypoglycemia or has had pre-meal insulin, may cause low blood glucose. Students complain that they have inadequate time to finish their meal. Also, standardized testing may conflict with normally scheduled snacks and meals.

The student with type 2 diabetes may face additional nutrition challenges at school. While portion sizes may be appropriate, the fat content of school lunch foods is sometimes excessive. Students may also make less than desirable beverage choices, especially if vending machines still dispense sugared drinks (5).

#### Solutions:

The United States Department of Agriculture’s Food and Nutrition Service document, “Accommodating Children with Special Dietary Needs in the School Nutrition Programs: Guidance for School Food Service Staff”, addresses diabetes issues (9). To seek such accommodation, parents should provide documentation of nutritional needs and meet

with school health and nutrition personnel at the beginning of the school year to plan. If a 504 accommodation meeting occurs, it is often very helpful for the diabetes team dietitian to participate either in person or by phone. The 504 plan should describe a mechanism whereby parents are notified in advance of deviations in normal meal/snack routine. Scheduled snacks must be allowed during standardized testing.

Many school districts now publish menus in print or online. This helps parents determine nutrient content or the need to send lunch from home on a particular day. Another source of information is the Food and Nutrient Database on the USDA's Food and Nutrition Services (FNS) website. FNS also offers fact sheets on all commodity foods served in the National School Lunch Program.

A recent "smart pump" development that helps in carbohydrate counting is the availability of a customizable food database in one manufacturer's pump model. The user selects the food item and enters the serving size. The pump then calculates the recommended food bolus.

The child and family should meet at least annually with a registered dietitian experienced in pediatric diabetes to review serving sizes, carbohydrate counting skills, and appropriateness of the food plan.

### Exercise

#### Challenges:

Students with diabetes need exercise just like their classmates. They also need the opportunity to be fully integrated into the curriculum which includes participating in any activity offered. This may require additional blood glucose monitoring, access to snacks, etc. For a student wearing an insulin pump, high-impact sports may damage the device or cause dislodgement of the infusion set.

#### Solutions:

All school personnel supervising physical activity should be trained in management of hypoglycemia and hyperglycemia. The student should monitor blood glucose frequently during such activity and be proactive. Emergency supplies and extra snacks should be readily accessible at all times. For an excellent review of managing exercise in youth with diabetes, see the Winter 2005 edition of this newsletter (10).

Therapy options for an insulin pumper include disconnecting from the pump for a short time and covering missed basal as needed. Some pumpers are successfully using a combination ("untethered") regimen which provides some of the basal insulin with a long-acting analog and a reduced pump basal rate. This can prevent high blood glucose levels and/or ketosis when the infusion is interrupted for any reason (11).

### Management of Hyperglycemia and Hypoglycemia

#### Challenges:

Even with the best of plans, unanticipated variables can cause extremely high or low blood glucose levels. Nothing is more unnerving to students, parents, or the healthcare team than the potentially inappropriate response to a diabetes emergency by school personnel.

The practice of sending a young student to the office with a classmate to check blood glucose when hypoglycemia is suspected is also troubling. Refusing to train school personnel to give Glucagon to a student with severe hypoglycemia is akin to refusing to administer CPR while awaiting EMS arrival. During hyperglycemia the student should be allowed extra bathroom breaks and ready access to extra drinking water.

School caregivers in turn sometimes have difficulty reaching parents or emergency contacts when students are having extremely high or low blood glucose levels at school and/or exhibiting signs of illness. School caregivers are sometimes forced to call the diabetes provider staff for help.

#### Solutions:

All school personnel directly responsible for the student with diabetes should be educated about signs and symptoms of high and low blood glucose levels. Substitute teachers and bus drivers must be included in training. At least two persons in the school should be trained in the emergency injection of glucagon for severe hypoglycemia. One of these persons should accompany the student on field trips or other school-related outings.

Students should not be left alone nor sent to the office with another young student during suspected hypoglycemia. Diabetes supplies should be accessible to the student at all times.

The parent/guardian or emergency contact should be accessible by phone to the school and should be prepared to promptly pick the student up in the event of illness or blood glucose excursions that are not responding adequately to treatment. Completing the necessary HIPAA and/or FERPA authorizations will help facilitate communication while protecting both the student's safety and privacy. In the event that the school must call the diabetes educator for help, he or she should share only protected health information necessary to protect the patient from immediate harm. Further disclosure should be made only with the written consent of the parent/guardian (12).

#### Training School Personnel

##### Challenges:

Pediatric diabetes care is constantly evolving and undergoing a technological revolution. The trend is toward more intensive management which can place greater demands on school staff. Few states have school nurses available full-time in every school attended by a student with diabetes. More often the school nurse oversees care in several schools.

##### Solutions:

Quality diabetes training programs needed to be provided to school personnel. The most workable model is to provide Train-the-Trainer programs to school nurses and school

dietitians who in turn can train school staff and perform competency checks and monitoring (12). Many excellent resources are available from the National Diabetes Education Program and the American Diabetes Association (<http://www.diabetes.org/advocacy-and-legalresources/discrimination/school/schooltraining.jsp>). Many states now have also laws, guidelines, and/or other resources which address the needs of students with diabetes in public schools.

Table 2. States with Rules and/or Recommendations Regarding Care of Students with Diabetes		
State	Laws, Rules, Policies, etc.	Guidelines/Resources
Arizona		✓
California	✓	
Colorado		✓
Connecticut	✓	
Florida		✓
Hawaii	✓	
Illinois		✓
Kentucky	✓	
Massachusetts	✓	
Minnesota		✓
Missouri		✓
Montana	✓	
Nevada	✓	✓
New Jersey		✓
New York	✓	✓
North Carolina	✓	✓
Oklahoma		✓
Oregon	✓	✓
Rhode Island	✓	
South Carolina	✓	
Tennessee	✓	✓
Texas	✓	✓
Utah		✓
Vermont		✓
Virginia	✓	✓
Washington	✓	✓
Wisconsin	✓	

### Summary

The care of students with diabetes clearly requires the collaboration and cooperation of the student, family, school personnel, and the diabetes care team. Even the most independent, reliable of students can become helpless in the setting of hypoglycemia and

require assistance of well-prepared adults to avoid harm. Parents should be able to send their child to school knowing that the Diabetes Medical Management Plan will be followed and that the school will communicate in a timely and sensitive manner regarding diabetes concerns. Conversely, the school needs to be able to count on the family to provide the necessary supplies, equipment and medication, and the diabetes care team to oversee an effective plan to meet the student's needs. Working together we can help the school experience be a very positive one for students with diabetes.

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