

## Management of Children with Diabetes in the School Setting

According to the SEARCH diabetes study, there are more than 190,000 children under the age of 20 with diabetes. The incidence is 1.93/1000 for type 1, 0.24/1000 for type 2 diabetes; and .05/1000 for other forms of diabetes,<sup>1</sup> with increasing rates of childhood obesity, type 2 diabetes is becoming more common in youth.<sup>2</sup> Despite advances in diabetes management, many youth around the United States fail to meet A1C goals.<sup>3</sup> Because most youth spend a significant amount of their day in school and related activities, diabetes care in school is an important part of their diabetes management. Health and safety of the student are placed at risk when medication, food and physical activity are not balanced. In addition, the ability to learn is compromised when blood glucose is not within a reasonable range.

***Diabetes educators are well positioned to help optimize care of the student with diabetes within the school setting. The American Association of Diabetes Educators supports and advocates for:***

1. involvement of the diabetes educator in developing and implementing written plans of care for the student with diabetes;
2. use of the AADE7™ Self-Care Behaviors as a framework for school-based diabetes care
3. U.S. federal and state laws/regulations and policy change that support and protect students with diabetes in school<sup>4</sup>;
4. the inclusion of a school nurse who is responsible for coordinating and leading school-based diabetes care on the diabetes health care team<sup>5</sup>;
5. the training of nonmedical school personnel (by the school nurse, diabetes educator, or other qualified healthcare provider) to provide care and assist students with diabetes tasks in their normally assigned school when sanctioned by law and or regulation, advocating for change when specific tasks are not permitted by state law or regulation<sup>5</sup>
6. diabetes self-management by the student with diabetes, while at school and school activities, when deemed appropriate by the student's diabetes health care provider, and school nurse and/or school administrator;<sup>6</sup>
7. children to engage in healthy eating, physical activity and performing the tasks of daily diabetes management; and
8. each individual student and their readiness to take ownership of their diabetes management as they transition throughout their academic years from preschool through college.

## Background

Diabetes management in children and adolescents requires multiple daily management tasks which can challenge caregivers. Nevertheless, the scientifically proven long-term health benefits of optimal diabetes control mandate that best efforts be made to manage diabetes at school as well as at home.<sup>7, 8</sup> Diabetes educators are ideally positioned to be involved in the process of educating school nurses and nonmedical school personnel about diabetes management, thus facilitating the student's diabetes care within the school environment. All school staff responsible for the student with diabetes must have a basic understanding of the disease, blood glucose goals, management tasks, and symptoms of hypoglycemia and hyperglycemia which may require intervention during school-related activities.<sup>9</sup>

School nurses are responsible for coordinating and overseeing medical management and safety during school hours and at all school-sponsored activities.<sup>6</sup> By adhering to diabetes standards of care and helping the school fulfill its responsibilities to provide care under applicable federal and state laws and regulations, they help to promote safety.<sup>6</sup> Not all schools employ licensed nurses, despite the recommended school nurse: student ratio of 1:750.<sup>10</sup> Even in schools, which do employ a school nurse, there will be times when the nurse will be unavailable to personally provide care for the student with diabetes. A recent study comparing perceptions of parents of students with diabetes suggests that those in states allowing nursing delegation of diabetes care tasks to trained non-medical personnel felt their children to be as safe as those in states that did not.<sup>11</sup> Thus, a small group of school staff members must receive student-specific training from a qualified health care professional in routine and emergency diabetes care tasks, including checking blood glucose, administering insulin/medications, aiding in the treatment of mild to moderate hypoglycemia and giving glucagon for severe hypoglycemia.<sup>12</sup>

Communication and collaboration between the school nurse, the student with diabetes, his/her family, the student's diabetes health care provider, and school personnel are essential to promoting the student's success and safety at school.

Immediate goals include access to needed care to maintain blood glucose levels within the student's target range and prevention of hypoglycemia and hyperglycemia so that less than optimal blood glucose control is not a barrier to achieving optimal school performance and attendance. Ongoing goals are normal growth and development, positive coping skills and avoidance of the chronic complications of diabetes.<sup>5</sup>

## Role of the Diabetes Educator

The diabetes educator serves as consultant, educator, resource person, facilitator, and advocate to parents/guardian, the student with diabetes, the diabetes health care provider and school personnel.

### ***The diabetes educator can:***

- be the primary contact and liaison between the school, parent/guardian, and diabetes health care team;
- be a resource for training and educating the school nurse and school personnel in the care of students with diabetes;
- educate and facilitate behavior change of students with diabetes, parents/guardians, and school personnel; and
- provide resources and expertise to help develop, implement, and update the written school based diabetes medical management plan (DMMP).

## A Legal Framework for Diabetes Care at School

Three federal laws and some state laws provide protections to students with diabetes: Section 504 of the Rehabilitation Act of 1973 (Section 504)<sup>13</sup>; the Americans with Disabilities Act (ADA)<sup>14</sup>; and the Individuals with Disabilities Education Act (IDEA).<sup>15</sup> Under these laws, diabetes is considered to be a disability, and it is illegal for schools and child care providers to discriminate against children with diabetes. Any school that receives federal funding or any facility open to the public must reasonably accommodate the special needs of children 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).

## Plans for Diabetes Management

Written plans are essential to foster understanding and a standard of care.<sup>5</sup> The types of written plans are as follows.

*The Diabetes Medical Management Plan (DMMP)* is a written document developed and signed by the student's healthcare provider that contains the medical orders for all aspects of the student's routine and emergency care and the student's ability to self-manage. The DMMP should include emergency contact information, as well as individualized information on all parts of diabetes management at school and is the basis for all healthcare and education plans designed to help ensure the student's diabetes needs are appropriately met in the school setting.

An Individual Health Plan (IHP) or Nursing Care Plan is often used by school nurses across much of the United States, and is required in some states. The DMMP serves as the foundation or diabetes-specific addendum for the IHP. An Individual Health Care Plan (IHP) or Nursing Care Plan, documents and communicates the student's health needs and management strategies for that student in the school setting.<sup>16</sup> An Emergency Care Plan (ECP) coordinated by the school nurse, flows from the IHP and the DMMP, and directs appropriate actions for school personnel in the event of a diabetes emergency, i.e. hypoglycemia or hyperglycemia.

The *504 Plan* defines aids and services and modifications needed by eligible students to enable the student to have full and safe access to all school activities while meeting diabetes management needs. It generally includes a statement about the diagnosis, explains how diabetes impacts daily functioning, and describes specific tasks and modifications necessary for effective diabetes management. For example, the 504 Plan may state that the student will not be penalized for missed assignments and/or classroom time for care of his or hers diabetes. This plan is written in collaboration with the parent and the school and is based upon and consistent with the DMMP. The 504 team should include the school administrative personnel, the student's teacher, school nurse and the parent/guardian. The diabetes educator may be asked to participate

in that process. It should address how diabetes needs will be met during the school day, field trips, extracurricular, and all school-sponsored activities.

The *Individual Education Program (IEP)* is a plan written for students who qualify for special education services under the Individuals with Disabilities Education Act (IDEA). Students with diabetes may qualify for an IEP if their diabetes or another disability adversely impacts their ability to learn and academic progression. Diabetes provision can be incorporated in the student's IEP and will substitute for the 504 plan.

## Applying the AADE7™ Self Care Behaviors in the School Setting

AADE uniquely advocates the concepts contained in AADE7™ Self-Care Behaviors that promote behavior change regarding the care of children and adolescents in the school setting.

The following section discusses the role of the diabetes educator and school-specific outcome measures for each of the AADE7™ Self-Care Behaviors: healthy eating, being active, monitoring, taking medication, problem solving, healthy coping, and reducing risks.

### Healthy Eating

Nutrition recommendations are based on requirements for all healthy youth, as there is no research on optimal nutrient requirements for children and adolescents with diabetes.<sup>8</sup> A child may have an individualized food plan that follows the general diabetes nutrition principles of healthy eating with the addition of carbohydrate counting.<sup>5</sup> It may be important that some children be provided with specific meal plans.<sup>17</sup>

Multiple studies have shown an increase in the prevalence of eating disorders/disordered eating behaviors in youth with diabetes, particularly adolescent females. These extremely risky behaviors can range from bulimia and insulin purging (bulimia) to binge eating.<sup>18</sup>

### **Diabetes educators can:**

- educate school personnel about the benefits of healthy eating, as well as the flexibility of food choices for children with diabetes;
- help determine the most appropriate meal-planning approach with regard to carbohydrate

- or calorie intake while at school based on child's eating patterns and insulin/and or oral diabetes medication plan - be it a flexible carbohydrate-counting approach or consistent carbohydrate approach at a specific meal or snack;
- instruct school personnel, as needed, in the chosen meal and snack planning approach; and
- alert school personnel, especially the school nurse, to signs of disordered eating when indicated.

### Being Active

Physical activity is another integral part of the child and adolescent's diabetes treatment plan and a healthy lifestyle at school and at home.<sup>19, 20</sup> When facilitating school-based activity, the diabetes educator should recommend the following:

- physical activity in planning meal/snack times and medication dosages;*
- understand the signs, symptoms, and treatment of exercise-induced hypoglycemia as well as the potential to avoid exercise induced hypoglycemia with insulin adjustments and pre exercise carbohydrates;<sup>21</sup>*
- on-site accessibility of a fast-acting carbohydrate containing snack to treat hypoglycemia;*
- designate times when physical activity should be delayed, avoided, or encouraged in the DMMP; and*
- support school policy that enhances daily physical activity programs.*

### Monitoring

Regular monitoring of glucose is recommended for all children and adolescents with type 1 diabetes and many youth with type 2 diabetes during the school day. The diabetes educators' role in self-monitoring glycemic control may include the following:

- collaborate with student, family, and school personnel to promote access to blood glucose monitoring whenever and wherever necessary;

- provide or facilitate blood glucose monitoring training for the student, family, and school personnel;
- provide guidance for a regular monitoring schedule and indications for additional blood glucose checking and document in the DMMP;
- assist school personnel in their role and understanding of other monitoring modalities such as blood or urine ketone testing and continuous glucose monitoring (CGM) as appropriate and how to act on the results if needed;
- facilitate the purchase of adequate and appropriate monitoring supplies for glucose and ketones to meet monitoring needs; and
- emphasize the importance of keeping an adequate number of diabetes supplies at school and provide a list if requested.

### Taking Medication

Attaining individualized glycemic targets with minimal hypoglycemia requires mastery of key concepts in diabetes medications by youth with type 1 diabetes, many with type 2 diabetes as well as their caregivers. Using the following guidelines for medication management, the diabetes educator can help optimize glycemic control during the school day:

- assist the School Nurse or appropriate personnel in the implementation of the DMMP, clearly outlining the student's in-school medication plan and updating changes in a timely manner; including insulin to carbohydrate ratios (for children using flexible carbohydrate counting approach), correction dosing using a correction scale or formula, timing of medications, and meals;
- facilitate appropriate medication adjustments with input from the student, parents/guardians, and school nurse;
- educate students, parents/guardian, and school personnel about current diabetes medications and delivery systems; and
- collaborate with family and school nurses to periodically assess and optimize student's level

of independence in diabetes medication administration.

### Problem Solving

Diabetes requires continual diligence to achieve optimal blood glucose target ranges. Managing hyperglycemia and hypoglycemia at school is essential to the learning process and academic success.<sup>22, 23</sup> Stress, illness, growth spurts and physical activity (e.g. physical education class, recess, field trips) can all impact blood glucose control on a day by day basis. Blood glucose excursions at school can be an opportunity for the student to problem solve, helping promote a better understanding of the disease, and keeping the child safe in school. Diabetes educators can:

- provide the action plan and needed instruction for treatment for mild to severe hypoglycemia;
- suggest appropriate blood glucose action levels and an action plan with needed instruction for hyperglycemia (including diabetes ketoacidosis prevention);
- support student access as needed to blood glucose meter, fluids, food, and/or the bathroom;
- assess for causes and patterns of blood glucose extremes and promptly re-evaluate the management plan in collaboration with the diabetes care team;
- communicate to school personnel the effect of hypoglycemia and hyperglycemia on cognitive performance;<sup>24, 25</sup>
- help plan ahead for diabetes management during special school situations such as standardized testing, field trips, parties, extracurricular activities and school emergencies;
- guide school staff and families as to when it is unsafe to keep the child at school for diabetes-related problems; and

- teach family/caregivers about federal disability laws offering accommodation of diabetes care needs, support parents/guardian in advocating for adequate access to school nursing and other health services, and directing them to appropriate resources and organizations.<sup>5</sup>

### Healthy Coping

Some students find adjusting to life with diabetes more difficult than others and may develop clinical depression. A recent study found 12.5% of adolescents with type 1 diabetes met the clinical threshold for depression.<sup>26</sup>

The needs of the child and/or adolescent with diabetes, caregivers and school personnel changes over time as the youth grows. Considerations of developmental and psycho-social needs are required when providing care and may include the following:

- be alert for warning signs of diabetes-related school stress (including poor attendance) and/or depression: refer to appropriate professional<sup>27</sup>;
- support the involvement of school friends in the student's diabetes care;
- encourage connection to a diabetes support system such as diabetes camp;
- minimize differences for youth by creatively helping them fit diabetes care into their school routine in easy and unobtrusive ways; and
- recognize the student's self-management strengths and help to build on them.<sup>28-30</sup>

### Reducing Risks

The most dangerous risk to the child with diabetes in school is severe hypoglycemia, which could potentially lead to seizure or death if not treated. Acutely elevated blood sugars can result in slowed cognitive processing, so students may not perform as well on exams. Blood borne pathogens can be of concern, and should be addressed. Chronic elevations in blood glucose can result in long term complications of diabetes, and can be impacted by interventions at school.<sup>31, 32</sup>

***To promote the health, safety and academic success of the student with diabetes and school contacts, the diabetes educator can:***

- assess the student’s capability of performing diabetes tasks in a safe manner at school;
- coach student in safe practices when managing sharps at school;
- advocate for school attendance polices that allow students with diabetes adequate medical follow-up without penalty; and
- recommend standard vaccinations to include annual influenza vaccination and one-time pneumococcal vaccination for all students with diabetes.<sup>27</sup>

### Recommendations

Diabetes educators are instrumental in facilitating essential care and safety of students with diabetes at school. Goals are:

- glycemic control and overall safety;
- incremental independence in diabetes self-management;
- full realization of learning potential;
- a positive school experience;

- normal growth and development;
- normal school attendance; and
- positive coping skills.

***AADE believes that application of the AADE7™ Self-Care Behaviors will foster these behavioral goals. In conclusion, this position statement supports the following:***

- a medically safe school environment;
- self-management by students with diabetes when deemed appropriate;
- a healthy eating plan and physical activity; access to, accommodation, and a discrimination-free school experience for all school activities; written diabetes care plans for students with diabetes;
- advocacy for the training of nonmedical school personnel to administer glucagon and insulin/medications in the absence of the school nurse ; and
- active participation of the diabetes educator in working with the school nurse and other school personnel to achieve these goals.<sup>30</sup>

### **Additional Resources:**

- American Diabetes Association – Safe at School
- [www.diabetes.org/safeatschool](http://www.diabetes.org/safeatschool)
- Centers for Disease Control and Prevention – Managing Diabetes at School
- <http://www.cdc.gov/features/diabetesinschool/>
- Children with Diabetes – Diabetes at School
- [http://www.childrenwithdiabetes.com/d\\_0q\\_000.htm](http://www.childrenwithdiabetes.com/d_0q_000.htm)
- JDRF – School Advisory Toolkit
- <http://typeonenation.org/resources/type-1-toolkits/>
- Joslin Diabetes Center – For School Nurses
- [http://www.joslin.org/for\\_school\\_nurses.html](http://www.joslin.org/for_school_nurses.html)
- National Diabetes Education Program - Diabetes Resources for Schools and Youth
- <http://ndep.nih.gov/publications/PublicationDetail.aspx?PubId=97#main>
- **Acknowledgments:**
- Carla Cox, PhD, RD, LD, CDE, CSSD; Paula Jameson, ARNP, MSN, CDE; Sharon Ferguson, RN, CDE

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