

Developing Diabetes Training Programs for School Personnel

by Paula L. Jameson, ARNP, MSN, CDE

One of the great challenges facing us in pediatric healthcare is meeting the needs of school-aged children with chronic health problems. Nowhere is this more challenging than in the case of students with diabetes. For young and newly diagnosed children, a trained adult is needed to perform such tasks as assisting with blood glucose testing, following the meal plan, administering insulin, and managing hypoglycemia and hyperglycemia. For older, more experienced children, some supervision is often needed. Assistance with hypoglycemia or other diabetes emergencies must be available during school and extracurricular activities.

Why is diabetes control at school so important?

- For the immediate safety of students with diabetes
- For the long-term health and productivity of students with diabetes
- To ensure that students with diabetes are ready to learn and fully participate in school activities
- To minimize disruption in classroom activities due to diabetes emergencies

Children spend many hours a day in school; thus, providing services and support in this setting is particularly crucial. School nurses are instrumental in providing these services. Unfortunately, the number of school nurses has dwindled over the years. Until the time when this

shortage is alleviated, it is necessary to empower school nurses and ancillary school personnel to provide care and support safely to students with diabetes. Such care and support might involve:

- Helping the student follow the recommended nutrition plan
- Providing access to low-blood-glucose supplies and equipment during exercise periods
- Recognizing and treating diabetes emergencies and administering glucagon by injection
- Testing blood glucose, routinely and at times of suspected hypoglycemia or hyperglycemia
- Injecting insulin, both routinely and as needed for hyperglycemia
- Operating/troubleshooting an insulin pump
- Accommodating diabetes-related needs during special circumstances, such as tests, field trips, extracurricular activities, and disasters

The purpose of this article is to give school nurses tips on organizing and implementing effective training programs for school personnel who care for students with diabetes. In preparation for writing this article, the author conducted a survey of pediatric diabetes educators across the country who have participated in this type of training to collect their suggestions. Their suggestions have been incorporated throughout the article.

Assessing Needs and Available Resources

Update Knowledge

The first step for school nurses charged with organizing training is to update their own knowledge about diabetes. A good beginning is to contact a pediatric diabetes educator at a children's hospital or pediatric diabetes practice in the area. It is helpful to spend time with this person to review current trends and anticipated needs. The diabetes educator can suggest helpful reading material and websites used by families of their patients (see Resources). It would be highly instructive to spend a day at a diabetes camp to get the "big picture" of life with childhood diabetes, although this may be difficult to manage.

Assess Training Needs

Long before the school year begins, assess training needs by considering these questions:

- What schools do the students with diabetes attend?
- Who is expected to return the next school year, or for summer session?
- Which students can be expected to be transferring from a lower school?
- How old and experienced are the students with diabetes?
- Is there a full-time RN or LPN assigned to the school?
- If students are young or new to diabetes, do they have parents who are available on short notice to come to school to give shots without endangering their job security?

Students in elementary schools and developmentally delayed children usually require the most assistance with their diabetes management. Younger students who eat school-provided breakfast and/or lunch may also need some support and information on how to incorporate school foods into their diabetes nutrition plans.

Obtain Information About the Students with Diabetes

Obtain as much student-specific information as possible to help forecast your needs. How many students are using an insulin pump in the schools? How many children require a shot before lunch on a routine or as needed basis? Review statistics from the previous year to help predict needs. Having a current Diabetes Medical Management Plan on file for each student with diabetes is very helpful in conducting this assessment. A Diabetes Management Plan is a written description of the student's care regimen during the school day developed by the diabetes healthcare team and family.

As for type 2 diabetes, most new cases will occur in middle or high school. Affected students may need to test blood glucose levels, and some may need to use insulin at school. Glucagon may be prescribed for insulin users at the diabetes care provider's discretion.

Survey Available Resources

Conduct a survey of internal and external resources that are available to help students with diabetes. Internal resources include personnel, materials/equipment, technology, budget, space, time, and opportunities for training. When looking at human resources, consider staff who have had direct personal or professional experience with childhood diabetes. Licensed professional staff with this experience will be instrumental in training inexperienced school personnel. They should be included in "train-the-trainer" sessions held before school starts.

Partnering with Pediatric Diabetes Educators

When planning a training program, establish a partnership with pediatric diabetes education experts — they can help make your job much easier. Often, they have

prepared presentations and educational materials and may be available to "train-the-trainers." While it is unlikely they will be able to train all school personnel, they have teaching tools that are designed to teach unskilled persons all aspects of diabetes management. Additionally, they may have access to people, supplies, and materials available from various diabetes vendors. Some clinics encourage families to return expired supplies, such as glucagon kits, for use in training families and care givers, and they may make these available for training school personnel. The local pediatric diabetes educator also may have a professional network that can provide extra manpower for training programs.

Tap Into Existing Resources

An important tool for all partners in school-based care of the student with diabetes is the National Diabetes Education Program's publication *Helping the Student with Diabetes Succeed: A Guide for School Personnel* (<http://www.ndep.nih.gov/diabetes/youth/youth.htm>). NDEP developed this guide to educate and inform all school personnel about diabetes, how it is managed, and how each member of the school staff can help meet the needs of students with the disease. School nurses who are planning training also should familiarize themselves with any state or local guidelines for the care of these students; at least 12 states have published their own.

The American Diabetes Association has developed a training program called "Diabetes Care Tasks at School: What Key Personnel Need To Know." The program is designed to help schools put into operation the framework for diabetes management set forth in the NDEP school guide. This training program consists of eight downloadable PowerPoint modules: Diabetes Basics, Blood Glucose Monitoring, Managing Hypoglycemia and Hyperglycemia, Glucagon Administration, Insulin Administration, Ketone Monitoring, Nutrition and Exercise, and Legal Issues. The online Glucagon module includes web-based video instruction on administration of glucagon by injection. The Internet can also provide a wealth of training resources for school nurses.

Many manufacturers of blood glucose monitors and insulin delivery devices, such as insulin pens and pumps, have online interactive tutorials for their particular devices. For nutrition education, excellent resources can be found at the U.S. Department of Agriculture's "Team Nutrition" website. In addition, the USDA has the "National Nutrient Database for Standard Reference," which can provide nutritional information, including carbohydrate content of a wide variety of foods. There are also Commodity Fact Sheets available at the USDA's web site with nutrition information for every food distributed through the National School Lunch Program. (For additional useful training materials, see Resources.)

Implementing the Diabetes Training Program

Once students with diabetes are assigned to schools and classrooms, all school personnel who have responsibility for the student with diabetes in their school should be trained promptly.

They should receive training that provides a basic understanding of the disease and student needs, how to identify medical emergencies, and which school staff members to contact with questions in case of an emergency.

A small group of school staff members should receive training from a qualified healthcare professional such as a physician or nurse in student-specific routine and emergency care so that a staff member is always available for younger or less experienced students who require assistance with their diabetes management (e.g., administering insulin, checking blood glucose, or choosing an appropriate snack) and for all students with diabetes in case of an emergency. This group may include the school nurse and school staff who are not healthcare professionals.

Dividing Training Sessions Into Modules

A modular style of instruction often works best. Have employees complete only modules appropriate to their level of responsibility. For instance, a school bus driver would not need to learn how to administer insulin but would need a basic understanding of diabetes and training in the recognition and treatment of hypoglycemia. The food

service manager and lunchroom staff/monitors may need detailed information on portion sizes, not needed in training for the classroom teacher.

Modules should be as short and interactive as possible, limiting didactic information to about 20 minutes per module. This will allow time for practice and return demonstrations as appropriate. Handouts should be included for future reference and for sharing with new employees. Trainees should be encouraged to create a diabetes resource binder in the school clinic that can be appended with new materials as they become available; training records could also be kept there.

Provide Hands-On Training Opportunities

When teaching about portion sizes or carbohydrate counting, food models that learners could handle often can be borrowed from a diabetes education program. Food models can also be purchased from a variety of sources and could be useful in other settings. Another option is to use familiar objects, such as baseballs, computer mice, decks of cards, 4-ounce plastic juice containers, 1/2 pint milk cartons, computer disks, etc., to help visualize portion sizes. Actual food labels can be used to teach reading total carbohydrate content from prepackaged foods.

For hands-on skills, it is wise to set up training stations. Having at least one trainer available for every six trainees will help avoid delays. When training in blood glucose monitoring, several different meters and lancing devices should be available. One way to accomplish this is to set up stations manned by representatives from various meter companies (be sure to include latex [or vinyl] exam gloves to reinforce the need for universal precautions). Trainees can practice with glucose control drops provided by the manufacturer, instead of blood.

For insulin injection training, several insulin pens should be available, as well as insulin (or saline) vials for practice injections, syringes, injection pillows (or rolled towels or oranges), pen needle removers, and sharps containers. Insulin pen manufacturers make saline disposable demonstration pens or saline-filled cartridges. Insulin training should include information on proper

storage and shelf-life of the insulin being used. Manufacturers furnish charts with this information, which can be posted where insulin is stored. Unfortunately, there is no control testing medium routinely available for urine ketone test-strips, but water can be used for practice.

Use Reality-Based Teaching Techniques

Diabetes educators suggest using actual examples introduced by the trainer or audience members to teach about recognizing and managing hypoglycemia and hyperglycemia. Such approaches help make the content seem real and also may help the trainer(s) by introducing circumstances not yet considered. Have samples of products available to treat hypoglycemia, such as glucose tablets and gel, as well as the glucagon kits (see Assessing Needs).

Incorporate Problem-Solving Exercises

For school personnel assisting children using intensive therapy, such as insulin pumps or multiple daily pre-meal injections of insulin combined with a long-acting basal insulin, e.g., Lantus® (glargine), trained diabetes personnel will need to know how to calculate appropriate doses of insulin to “cover” meals or snacks and to correct high glucose readings should they occur, as per the student’s Diabetes Medical Management Plan. Practice problems should be utilized to ensure accuracy. Calculators should be provided to trainees as well as reference materials to verify carbohydrate counts. Many newer models of insulin pumps have a calculator built into the pump itself. Some blood glucose meters can also now relay the result into their companion pump for dosage calculation!

Everyone who will be referring to the Diabetes Medical Management Plan should be very familiar with its layout and content, and all school personnel need to know where hypoglycemia supplies are kept. Trained diabetes personnel should know where other supplies are kept, including insulin and glucagon.

For schools that have students wearing insulin pumps, it is crucial to give an overview of insulin pump therapy to all school personnel to avoid inadvertent removal of this life-sustaining device. More detailed instructions should be given to the

trained diabetes personnel on a one-on-one basis, preferably with the student and family member present. The local pediatric diabetes educator or a Certified Pump Trainer from the manufacturer should be available to assist with the technical aspects of this training.

Evaluation and On-going Monitoring

Before assisting the student, trained school personnel should have their competencies ascertained on the particular meter and lancing device being used by the student(s) in their care, even if students ordinarily will be able to perform that task without help. Their competencies should be re-validated at least once a year. For examples of competency-based training checklists, see the *Nursing Guidelines for the Delegation of Care for Students with Diabetes in Florida Schools*.

Testing mastery of didactic content can be done using post-tests. Again, the pediatric diabetes educator may be a source for post-tests designed for patients and their families that could be easily adapted for school training. The test content can be clustered and/or modified as appropriate for the modules being used. Post-tests can also be used to determine a need for refresher classes.

Written evaluation of training sessions by the participants will help make future sessions even more effective. Monitoring student outcomes, (e.g., episodes of hypoglycemia or hyperglycemia, time lost from the classroom, attendance, and academic performance), may also be fruitful.

Conclusion

While the prospect of implementing a diabetes training program may seem daunting, the results are usually quite rewarding. Most of the diabetes educators surveyed noted extremely positive results: excellent knowledge retention, improved care of students, good participation by learners with excellent feedback. Considering the dedication of most school personnel to the well-being of students, this is no surprise. Given the right information and support, school personnel can help students with diabetes reach their academic goals and grow up to live happy, healthy, productive lives. 🐾

REFERENCES

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U.S. Department of Agriculture, Agricultural Research Service (2004). *USDA National Nutrient Database for Standard Reference, Release 16-1*. Nutrient Data Laboratory Home Page, <http://www.nal.usda.gov/fnic/foodcomp>.

U.S. Department of Agriculture, Food and Nutrition Service (2004). *Commodity Food Fact Sheets for Schools and Institutions*. <http://www.fns.usda.gov/fdd/facts/schfacts/ALL/ALL.ASP>

RESOURCES

Websites for general pediatric diabetes information and assistance:

American Association of Diabetes Educators
www.aadenet.org

American Diabetes Association
www.diabetes.org
Barbara Davis Center for Childhood Diabetes
www.uchsc.edu/misc/diabetes/bdc.html

Children with Diabetes
www.childrenwithdiabetes.com

National Diabetes Education Program (800-438-5383)
www.ndep.nih.gov

PADRE Foundation
www.pedsonline.org

Team Nutrition (USDA)
www.fns.usda.gov/tn/

Websites for blood glucose monitoring:

AccuChek (Roche Diagnostics)
www.us.diabetes.roche.com/index.html

Ascensia™ (Bayer)
www.bayercaresdiabetes.com

BD Logic™ (Becton Dickinson, Inc)
www.bddiabetes.com

Freestyle Flash™ (Therasense, Inc.)
www.therasense.com

One Touch™ (Lifescan/Johnson & Johnson)
www.lifescan.com

Precision™ (Medisense, Inc.)
www.abbott/medisense.com

Prestige/TrueTrac (Home Diagnostics, Inc.)
www.prestigesmartssystem.com

Websites for insulin/insulin delivery devices:

Aventis Pharmaceuticals
www.lantus.com

Eli Lilly and Company
www.lillydiabetes.com

Novo Nordisk Pharmaceuticals, Inc.
www.novonordisk.com

Videos

South Florida Association of Diabetes Educators (2002). *Diabetes in the School: Students at Risk*. Coral Springs, FL.

Children's Hospital of Los Angeles (2001). *Glucagon Can Save a Life*. Los Angeles, CA.

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