2016

Developing a Guideline for Care of Students with Diabetes

Rita Ozioma Onwenna-Aninyei
Walden University

Walden University

College of Health Sciences

This is to certify that the doctoral study by

Rita Onwenna

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee
Dr. Marisa Wilson, Committee Chairperson, Health Services Faculty
Dr. Murielle Beene, Committee Member, Health Services Faculty
Dr. Barbara Gross, University Reviewer, Health Services Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2016

Abstract

Developing a Guideline for Care of Students with Diabetes

by

Rita Onwenna-Aninyei

MS, California State University, 2008

BS, University of Phoenix, 2003

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

October 2016

Abstract

Diabetes mellitus (DM) is one of the most common chronic diseases affecting children under the age of 20, and it often leads to serious complications. In recent decades, there has been an increase in incidence of both types of DM among U.S. children. Having this chronic condition not only negatively impacts the health of these children but also their academic achievements. School health nurses struggle to manage these children appropriately and safely. The purpose of this project was to develop an evidence- based guideline for a standardized process in which school nurses coordinate the school and student health care teams to ensure a safe school environment for diabetic children. The Stevens star model of knowledge transformation was used to frame the development of this guideline. A team of experts, consisting of 10ten school nurses, was assembled to provide formative and summative evaluations of the guidelines. Nine nurses completed and returned the questionnaires within the allotted time. The formative group feedback resulted in the revision of the guideline prior to distribution for the summative evaluation. The experts then participated in a summative evaluation using the Appraisal of Guidelines for Research & Evaluation (AGREE) II instrument. The revised guideline was approved and recommended for use by all of the experts without additional modification. Implementation of the guideline will result in social change by improving outcomes in students' health and academic achievement and in strengthening the role and autonomy of the school nurse. Dissemination will occur first in the school district through presentation and then to a larger audience through publication in journals focused on school nursing.

Developing a Guideline for Care of Students with Diabetes

by

Rita Onwenna-Aninyei

MS, California State University, 2008

BS, University of Phoenix, 2003

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

October 2016

Dedication

I would like to dedicate my DNP project to my mother, Mary Onwenna, and in memory of my father, Honorable Charles Chianugo Onwenna. Both of my parents have been my utmost inspiration in encouraging me to be the best I can be at all times and to never give up on my dreams.

Acknowledgments

I would like to thank my faculty committee members, Dr. Marisa Wilson and Dr. Murielle Beene, for their guidance, expertise, and support. Your leadership skills and collaboration were crucial to my completing this project. I would also like to thank my preceptor, Dr. Mezia Azinge-Obasi, as well as family and friends for their support, encouragement, and understanding through this journey.

Table of Contents

List of Tables

List of Figures

Section 1: Nature of the Project

Over the past four decades, the number of children with chronic conditions such as diabetes, asthma, and epilepsy has increased dramatically (Butler, Fekaris, Pontius, & Zacharski, 2012). These chronic conditions greatly impact learning. Diabetes mellitus (DM), which is one of the most common conditions that affects children, has been increasing in incidence globally among all age groups, sexes, and ethnic groups since 1990 (Centers for Disease and Prevention [CDC], 2012). However, the incidence is highest among minorities (CDC, 2012). According to Dabelea et al. (2014), DM affects children under the age of 20, and can lead to serious complications. Over the past two decades, there has been an increase in incidence for both types of DM in the United States (CDC, 2015). Type 1 DM has increased 21.1%, and type 2 DM has increased 30.5% (Dabelea et al., 2014). Montebello Unified School District (MUSD), the site for this project study is not an exception.

MUSD is located in Southern California and has 16 elementary, six intermediate, and five high schools with over 30,000 students between the ages of 5 and 21 in both regular and special education with 10 nurses responsible for the health needs of these students. The district is made up of 95.5% Hispanic or Latino children (MUSD, n.d.). Based on the report obtained from the district information system (Synergy), in the 1993-1994 school year only two students were recorded as having DM. In the 2003-2004 school year, 63 students were recorded as having DM, and 67 students were recorded as having DM in the 2013-2014 school year. Due to this increase, the district contracted two registry nurses to assist district nurses in providing care for these students in the school. For patients to adequately manage diabetes, their blood sugar level must be constantly

monitored and may require multiple insulin injections. Because most of these children attend some form of school or day care, it is imperative to have knowledgeable school personnel to provide a safe environment for these children to learn (American Diabetes Association [ADA], 2003). It is also important to have synchronization and partnership among the school health care team members and the student's personal diabetes health care team members (National Diabetes Education Program [NDEP], 2010). The school nurse having the skills and knowledge required in the school will be responsible for coordinating the care and helping the students in diabetic self-management (National Association of School Nurses [NASN], 2012).

Although some states such as New York, New Jersey, and Florida have established general guidelines for diabetes care in schools, states like California do not have established guidelines for diabetes care in schools. Local school districts are left to establish individual policies that have resulted in diversity in policy and a lack of standardization. Establishing guidelines will create a standardized process for the school nurses to coordinate and provide adequate diabetic care for diabetic students in the school environment (Mandali & Gordon, 2009).

Problem Statement

Diabetes is a devastating disease that is affected by interdependent genetic, social, economic, cultural, and historic factors. DM incidence continues to rise globally, and as one of the chronic conditions it has enormous health and economic implications for individuals and the United Stated as a whole (CDC, 2012). Diabetes is one of the most common chronic diseases affecting children under the age of 20 (Dabelea et al., 2014). According to the ADA (2003), most of these children attend some form of school or day

care; therefore, it is vital for the school nurses to coordinate and train school personnel to be knowledgeable about DM and ensure that the school environment is safe for these children to learn. Parents need to provide the school with necessary information and supplies to adequately care for these children. In addition, parents have to work collaboratively with school personnel to ensure that students have full participation in school activities and are safe in the school environment (ADA, 2003). For these children to be safe and achieve better outcomes, they must be able to balance their meals, medications, and activity levels. Inability to achieve this stability can lead to low blood sugar, which is the most common immediate health problem for diabetic patients. Low blood glucose can result from very little food, too much insulin, or excessive exercise. Another complication that could result is hyperglycemia, which is when the body has too much glucose because of too little insulin or exercise or too much food. The Diabetes Control and Complications study indicated a strong correlation between glycemic control and developing complications related to diabetes (ADA, 2003).

There is need for collaboration and coordination among all parties involved. The school nurse, who has the necessary skills and knowledge required in the school, will be responsible for managing the care and helping these students achieve adequate diabetic self-management (NASN, 2012). Unlike states such as New York, New Jersey, and Florida who have established general guideline for diabetes care in the school, the state of California does not have any established guidelines for diabetes care in the school. Local school districts are left to establish individual policies, which results in lack of standardization. An evidence-based guideline is needed to assist school districts in creating a standardized process for the school nurses to coordinate care for diabetic

students in the school environment. This guideline will help ensure that students achieve academic success, growth, and development, and avoid complications that could result from inadequate glycemic control (Kaufman, 2009). Although the role of the school nurse in diabetic management is recognized, there is currently no federal law mandating their hiring. Nursing services, however, are required to meet the needs of Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 (Butler et al., 2012).

Purpose Statement

The purpose of this evidence-based project was to develop a guideline that will create a standardized process for school nurses to coordinate and effectively train school personnel on diabetes management. This process will allow schools to guarantee a safe learning environment for diabetic students, especially those with insulin dependent DM (NDEP, 2010). According to Amillategui, Calle, Alvarez, Cardiels, and Barrio (2007), most parents whose children are diabetic do not feel that their children get adequate diabetic care at school. However, parents believe that there is need for collaboration between parents and school personnel, with the school nurse responsible for coordination (Amillategui et al., 2007). For the nurses to coordinate the care of these students adequately, it is essential to establish a guideline. The purpose of this guideline was to establish a standardized process of providing care to diabetic students within this school district. Moreover, this guideline will ensure that these students have a safe learning environment and that nonmedical staff have adequate knowledge to provide necessary care for them. For these students to be safe and to achieve better long-term academic outcomes, it is crucial that they are able to balance their meals, medications, and activity

levels (ADA, 2003). I incorporated the district nurses' recommendations and information from my review of the literature to develop an evidence-based guideline that will create a standardized process for school nurses to adequately manage diabetes in the school environment.

Significance to Practice

DM is a public health issue worldwide. In 2011, about 366 million individuals globally were projected to have diabetes (Lucha-Lopez, et al., 2014). It is a significant source of illness and death in the United States, with a very high incidence among minorities. DM is the seventh leading cause of death in the United States. It lowers individual life expectancy by 15 years and increases the risk of developing heart disease by 2 to 4 times. In addition to the health problems related to DM, it cost the United States about $174 billion in 2007 (HealthyPeople.gov, 2014). One in every five dollars spent in health care is related to diabetes. An individual with DM spends an average of $13,700 in medical expenses annually; $7,900 is attributable to diabetes (ADA, 2014a). The rise in DM prevalence in the United States is due to several factors including but not limited to increase in the aging population, minority population, and risk factors such as obesity and sedentary lifestyle (CDC, 2012).

Establishing an evidence-based guideline will empower school nurses to provide optimal care based on scientific studies, not on assumptions (Silverstein et al., 2005). Health care leaders have emphasized that health care should be provided based on scientific evidence; however, a substantial gap exists between the recommendations derived from evidence-based care and actual care being provided to patients (Gifford, Graham, & Davies, 2013). Clinical guidelines assist in the translation of scientific

discoveries into best practices and can assist in linking facts about effective care with actual practice (Gifford et al., 2013).

DM requires 24 hours a day and seven days a week for proper management (NDPE, 2010). Diabetes, especially type 1, requires frequent observation of blood sugar levels throughout the day and several insulin injections via insulin pump or by injection with a pen or a needle to achieve adequate glycemic control and decrease diabetic-related complications. To help students manage their diabetes in the school environment, it is crucial to have organization and partnership between students' health care management team and the school health team (NDPE, 2010). Most parents do not think that teachers have appropriate understanding of disease management (ADA, 2003). Parents do not feel that their children get adequate diabetic care at school, and that it is essential for the school nurse to coordinate the collaboration between parents, school personnel, and the student's health care team (Amillategui et al., 2007).

There is no current federal law mandating school nursing in the United States. Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 prohibit recipients of federal financial assistance from discriminating against people because of disability. The law requires school districts to accommodate students' needs (Butler et al., 2012), but there is no law mandating school districts to hire school nurses. "Under these laws, diabetes has been considered to be a disability" (ADA, 2003, p. 1). Moreover, the NASN recommended 1 full-time nurse for every 750 students for regular education. For students who require specialized school nursing services every day, the recommended ratio is 1 to 225 and 1 to 125 for students with complex health management needs (California School Nurses Organization [CSNO], 2010). At MUSD,

the nurse-to-student ratio is about 1 to 3,000. Given the high number of students per nurse and the lack of guidelines for care, nurses are not able to adequately care for students with medical conditions, which can impact students' ability to learn. Establishing guidelines for the care of students with diabetes in the district is necessary not only to create a standardized process to care for diabetic students but also for the following reasons: (a) to ensure that the students are safe, (b) to minimize the long-term health effects of diabetes, (c) to guarantee that these students can have academic success and have full participation in school activities, and (d) to diminish the disruption of academic activities by diabetes-related emergencies such as hypoglycemia and hyperglycemia (NDPE, 2010).

Implications for Social Change

Based on patients' and physicians' perceptions, managing diabetes is multifaceted and problematic due to the daily challenges such as frequent blood sugar checks, taking required insulin, and diet control; as a result, patients are not able to attain their optimal wellness (CDC, 2001). Recognition of the role of the school nurse in assisting students with diabetes management can help them reach their potential. Research indicates that children who lack adequate control of type 1diabetes experience substantial improvement in blood sugar when the school nurse oversees the blood sugar checks and medication (insulin) dose correction of these students (Nguyen, Mason, Sanders, Yazdani, & Heptulla, 2008). The recognition of the school nurse's role in diabetic management can have an impact not only on health outcomes but also on academic performance and the general well-being of the diabetic students. The NDPE (2010) indicated that adequate glycemic control not only decreases children's risk of developing chronic complications

related to DM but also assists them in feeling healthier, happier, and more productive in school.

To meet the needs of diabetic students in accordance with ADA mandates, school nurses are required to rely on the assistance of nonmedical staff (e.g., secretaries, teachers, and administrators). Often, staffs have limited diabetes knowledge and negative views about being responsible for the care of diabetic students. Gawwad (2008) demonstrated that there is a strong correlation between negative attitudes toward diabetic care and limited diabetes knowledge. Through proper training and oversight, these attitudes can be changed, which is vital to ensure the health and safety of diabetic students (Gawwad, 2008; NDEP, 2010). School personnel will respond appropriately in an emergency in a supportive school setting if they have adequate understanding of diabetes and the needs of diabetic students. This will facilitate students' ability to manage their disease successfully throughout the day and at school-sponsored events (NDPE, 2010). Inadequate glycemic control not only impacts educational productivity and health outcomes of these students, but also increases the financial burden on the individual and society as a whole (ADA, 2014).

Project Question

Will developing a guideline for care of diabetic students in the school environment support the following objectives?

- provide adequate knowledge necessary for nonmedical school personnel to care for diabetic students in the school and ensure that students with diabetes have a safe learning environment,
- assist students with diabetes in achieving suitable diabetic management, and

- provide a standardized process to care for diabetic students in the school.

Definition of Terms

For the purpose of this paper, the following terms were used:

Diabetes medical management plan (DMMP): A medical order written by the student's physician or health care provider outlining how health care related to diabetes will be provided to the student in the school environment (NDEP, 2010).

*Guideline***:** A set of recommendations established after critically examining applicable research findings (ADA, 2015).

Individualized health plan (IHP): A plan written by the school nurse based on the DMMP filled out by the student's physician that is distributed to the school personnel who are responsible for the care of the diabetic student during school hours. The plan includes (a) when and how often the student's blood sugar will be checked, (b) guidelines for administering insulin, (c) meals and snacks in relationship to the student's blood glucose and symptoms, (d) signs and symptoms of low and high blood sugar as well as the treatment, (e) ketone testing and guidelines with necessary actions, and (f) parents' emergency contact information (ADA, 2003).

School health care team: A team that includes the diabetic student, parents/guardian, student's teacher, administrators, school nurse, and other health care staff including counselors, school psychologist, coach, and other designated staff members (NDEP, 2010).

Student's health care team: A team of individuals that includes the diabetic student, parents/guardian, student's physician or health care provider, diabetic educator,

nurse, registered dietitian, and other health care practitioners outside of the school involved in providing health care for the student (NDEP, 2010).

Assumptions and Limitations

Assumptions

I assumed that all participants were able to speak English and were able to read, comprehend, and write English on a college level.

Limitations

The project was conducted in a local school district in the West Coastal region of the United States and may not represent the entire U.S. population. Due to the small sample size of participants to critique the guideline, it may not be generalizable to other school districts.

Summary

It is vital that the school district provide a safe and supportive learning environment for diabetic students that will enable them to balance their meals, activity level, and participation in school-sponsored events to ensure academic achievement as well as optimal health outcomes. Establishing a diabetic guideline will not only assist the nurses in adequately managing these students' health needs, but will also provide adequate knowledge to nonmedical school personnel who are necessary for providing a safe school environment. Also, the guideline will help students achieve adequate glycemic control thereby minimizing diabetic-related complications and optimizing long-term health outcomes and educational achievement (ADA, 2003).

Section 2: Review of Literature and Theoretical and Conceptual Framework

A great emphasis has been placed in the utilization of evidence-based practice (EBP) to guide nursing practice. Nursing care decisions should be based on the best available evidence in promoting quality of care provided to patients and their families (Grove, Burns, & Gray, 2013). The best patient outcomes can be achieved when EBP is delivered in a caring and supportive organizational environment (Fineout-Overholt, Williamson, Gallagher-Ford, Melnyk, & Stillwell, 2011). This section includes an examination of the scholarly literature to support the establishment of guidelines that will help the school personnel provide safe and adequate care for students with diabetes in the school environment.

Literature Search Strategy

I conducted comprehensive database searches electronically using The Cochrane Database, Medline with Full Text, CINAHL Plus with Full Text, Ovid Nursing Journals Full Text, and PubMed to locate recommendations from peer-reviewed studies. Search term used were *evidence-based guidelines*, *guideline appraisal*, *diabetes mellitus*, *glycemic control*, *diabetes management*, *school*, *parents perception*, *teachers perception*, *interventions*, *academic achievement*, and *article*. I used Boolean operators such as "and" and "or" to reduce the volume of hits. Inclusion criteria were years of publication from 2000 to 2015 and English only.

Specific Literature

To develop a guideline to establish a standardized process of providing diabetic care at school, ensure a safe learning school environment, and promote better long-term outcomes for diabetic students, I conducted an extensive literature search. Results were

narrowed to 15 evidence-based studies, and studies with no relevance to the project were not considered.

I conducted a meta-analysis and systemic literature review of school-based diabetes interventions and their outcomes over the past decade (2000 to 2015). Out of the 1473 initial articles, 120 were full-text articles, and 15 met the inclusion criteria. The literature review showed that school systems have been responding to the rise in diabetic incidence by applying diabetic interventions and educating school staff. This was their main focus prior to 2006. Furthermore, the results indicated that educating teachers, other school employees, and school nurses has led to an increase in knowledge and a boost in confidence in their ability to care for diabetic students (Pansier & Schulz, 2015).

West and Holmes (2014) surveyed 604 school nurses working in different school levels to find out how well the NASN position statement was being applied in U.S. schools and the role school nurses played in managing the care of diabetic students in the school environment. West and Holmes noted that using a diverse sample survey across the U.S. increased generalizability of results. Findings indicated that having a plan of care in place predicted glycemic control more effectively than having access to equipment used to check the blood sugar. This finding supports the role of school nurses in helping improve the health management of students with diabetes. West and Homes concluded the following: (a) the NASN position could serve as a model for care of children with diabetes in the U.S. schools, (b) school nurses should continuously be active participants in the resolution and understanding of the disease which has become more prevalent, (c) the NASN position statement could serve as a standard used to measure the effect of the school nurse role in caring for children with diabetes, and (d) the role teachers,

counselors and other school personnel play are vital for school nurses who provide care for diabetic children.

Amillategui et al. (2007) conducted an observational study in which 499 parents of children with type 1diabetes between the ages of 3 and18 years completed self-reported questionnaires. The purpose of the study was to determine how diabetes affects children, parents, and school employees and to examine the assimilation of these students, administration of insulin, blood glucose control, insulin administration, nutrition, physical activities, field trips, and educators and classmates' outlooks regarding the condition. Only 34% of parents believed that educators were able to identify the indicators of a mild incident of low blood sugar level. In addition, 17% of the participants had to change schools for their children due to the problems they encountered when school employees were notified of their children's condition. Also, 8% of parents were required to change schools while 5% were not accepted. In addition, 9% of parents had to adjust how they were checking the blood sugar, and 16% amended their treatment regimen because the school was not supportive. Amillategui et al. concluded that it is essential to train school personnel on type 1 diabetes care. In addition, there is need to increase the number of school nurses and have more resources available from diabetic associations to the schools. Additionally, Amillategui et al. recommended increased communication between parents and school staff to assist in fully integrating diabetic children in the school environment.

Hellems and Clarke (2007) sent an anonymous survey to parents of children with type 1 diabetes who were receiving diabetes management from the University of Virginia clinic and who attended public school in Virginia the year before. Parents were asked

about the school staff who provided care to their diabetic children via blood sugar checks, administration of insulin, and low blood sugar treatment. According to Hellems and Clarke, 185 parents from 153 different schools responded to the survey. Most parents (69%) reported that a full-time nurse had been assigned to their children's school, while administrators, teachers, cafeteria staff, and coaches were used to supplement the part-time nurses in other schools. Hellems and Clarke concluded that different trained medical and nonmedical personnel can safely provide care for students with type 1diabetes during school hours. This led to the passing of a law that allowed nonmedical school staff to help with care of students with diabetes during school hours, which will make the students safer at school and help them to achieve glycemic control (Hellems & Clarke, 2007).

Jacquez et al. (2008) surveyed an ethnically diverse group of 309 parents whose children were diabetic and who were drafted from an out-patient community-based and university-based diabetes clinic. The purpose of the study was to find out how the participants' children were being supported at school with regard to their diabetic care. Jacquez et al. also examined parents' concern about the type of care their children received in the school, and their knowledge about the federal law with regards to diabetic children. Result showed that several diabetic students did not have written care plan or a school nurse and that minority children had less support at school compared to their White counterparts. Findings also indicated that many diabetic students were permitted to check their blood sugar or administer their insulin in the classroom. In addition, most of the parents had concerns about their children having incidence of high and low blood glucose while at school. Parents reported minimal self-assurance about the capability of

the staff in providing diabetic care. Most parents had no knowledge of the federal laws pertaining to diabetic care in the school. Jacquez et al. concluded that these parents' children had received insufficient diabetic care in the school and had concerns regarding the diabetic care their children were receiving. Most of the parents lacked knowledge about the laws in place to protect children with diabetes (Jacquez et al., 2008).

Wagner, Heapy, James, and Abbott (2006) studied a convenience sample of 58 diabetic children between the ages of 8 and 15 years who attended an overnight camp for two weeks. The aim of the study was to explore students' and parents' perceptions of the children's school experiences, disease, and quality of life. Parents reported that students whose school staff and classmates had received diabetic training exhibited substantially improved glycemic control and better quality of life (QOL) than those whose classmates and staff did not receive diabetic training. Results also showed that children with more flexibility carrying out their diabetic regimen had better glycemic control than those who did not. Wagner et al. concluded that although diabetic students continue to face challenges at school, educating school personnel and their classmates about diabetes seems to improve diabetic students' ability to achieve glycemic control and to enhance their QOL.

Wang, Brown and Horner (2010) conducted a study on two Taiwanese adolescents to explore the life experiences of these type 1 diabetic students in the school environment. Wang et al. used audio-recorded, semistructured individual interviews. Transcripts were examined via hermeneutic circle. The subjects reported their life experiences at school were vibrant and educating. They revealed that they had to learn to master their disease, find ways to make themselves feel comfortable, feel the same as

other students, and not have others be concerned about them, especially their parents. Wang et al. concluded that school staff, nurses, parents, and diabetic health care providers should assist in making students adaptable to overcome common social challenges they may face in school. Staff and care providers should also help in creating an environment that is supportive by helping students manage their disease in their daily lives. Wang et al. suggested that upcoming research should address situational difficulties the adolescents experienced and propose things that can be done to improve diabetic care at schools.

Hayes-Bohn, Neumark-Sztainer, Mellin, and Patterson (2004) studied 30 adolescents and their parents using semistructured interviews which were recorded, transcribed, coded, and analyzed. The purpose of the study was to describe the subjects' fears and recommendations about the care they received at school for their type 1 diabetes. The results indicated that school personnel, especially teachers, had very little knowledge about diabetes, the students did not have many healthy food options available to them at school, and school policies and rules hindered their ability to perform diabetic self-management at school. As a result, there was a need to help diabetic students achieve self-care in the school (Hayes-Bohn et al., 2004).

Smith, Chen, Plake, and Nash (2012) studied 81 school employees who were recruited to assess how type 1diabetes education programs would increase the staff's diabetes knowledge and self-assurance in taking care of diabetic students in the school. Two kinds of education programs were administered: basic and expanded. The basic program included an hour of summary on diabetes, and the expanded program included an hour and half with more in-depth information on diabetes such as insulin

administration and targeted volunteer health assistants. Smith et al. reported that 44 subjects participated in the basic program, and 37 participated in the expanded program. For the basic group, pre- and posttests were administered to assess the knowledge gained. The expanded group received pre- and posttests to assess their confidence in providing diabetic care. The results showed an increase in both knowledge and confidence in both groups (Smith et al., 2012).

Schwartz, Denham, Heh, Wapner, and Shubrook (2010) surveyed a convenience sample of 130 children and adolescents with type 1 diabetes, their parents or guardians, and school employees at the school. Out of the 130 participants, 80 parents returned the survey while 28 surveys were returned by the school staff. The purpose of this survey was to explore the experiences of the diabetic students, parents, and school staff. The results indicated that although the overall diabetic experience was positive, the students felt they were treated differently in the school because of their disease. Parents reported that their general experience of having a child with type 1 diabetes in school was decent. Out of the 80 parents who returned the survey, 61% of them reported their experience as above average or excellent. Majority (93.9%) of the school staffs felt at ease working with diabetic children in the school environment. However, some problems were identified. One of the problems identified was inadequate training of the school personnel to handle diabetic emergencies such as high and low blood sugars. Also, inability of the staff to provide parents with nutritional information to assist parents in planning students' insulin dose was among the problem noted. Other problems were lack of standard IHP for these students in some schools, and inadequate number of school nurses or trained staff to make sure that these students were safe (Schwartz et al., 2010).

General Literature

Medical Emergencies

When diabetic patients are not able to stabilize their blood sugar, they run the risk of undergoing diabetic emergencies as a result of low or high blood sugar levels (ADA, 2003). Not having immediate access to blood sugar levels can impede the ability to recognize hypoglycemic episodes that are the most common immediate health problem for diabetic patients. Hypoglycemia can be identified by blood sugar checks and immediate access to glucose to prevent the patient from undergoing an unconscious episode (Australasian Pediatric Endocrine Group [APEG], 2005). According to Amillategui, Mora, Calle, and Giralt (2009), children had concerns about their inability to identify hypoglycemic episodes. In addition, the school staff also had fears about identifying low blood sugar levels and had concerns that diabetic students may slip into coma at school when necessary treatment was not performed rapidly (Amillategui et al., 2009). Nabors, Lehmkuhl, Christos, and Andreone (2003) reported comparable results that diabetic children were concerned about not being able to have easy access to necessary supplies they may need if a hypoglycemic episode occurs. One of the problems identified by Schwartz et al. (2010) was that school personnel were not adequately trained to handle diabetic emergencies such as high and low blood sugars. Wagner et al. (2006) indicated that those parents who reported that their children's school staff had received diabetes training had better control of their diabetes than those staff who did not receive training. Approximately 38% of the school staff reported having apprehension about their skills in helping students during a hypoglycemic episode (Schwartz et al., 2010).

Effects on Academics

My review of the literature showed that students with diabetes had more school absences as a result of their inability to adequately manage diabetic-related issues (Schwartz et al., 2010). Glaab, Brown, and Daneman's (2005) study included 78 Canadian children between the ages of 6 and 13 years and their 38 siblings. Glaab et al. examined 118269 age-matched peer report cards from prior years to identify absences. The results indicated that diabetic students had more absences with an average of 8.8 days compared to their nondiabetic counterparts who missed an average of 5.5 days. Furthermore, the results indicated that children with high glycosylated hemoglobin (HbA1C) or inadequate glycemic control had more absences than those with better glycemic control. Parent, Wodrich, and Hasan (2009) conducted a study in Phoenix, Arizona including questioners, parents, and teachers of 95 diabetic children between the ages of 5 to 18 years old and their healthy siblings. Results showed that diabetic children had 10 more days of absences compared to their siblings. Parent et al. reported that diabetic students frequently missed instructional time due to diabetic-related care they received during school hours. According to Wagner et al. (2006), out of 58 children who participated in the study, 56% of them missed class as a result of having to carry out routine diabetic care such as blood sugar checks, insulin administration, and treatment of low blood glucose level.

Glycemic Control

McCarthy, Lindgren, Mengeling, Tsalikian and Engvalle (2003) conducted a large study on children with type 1 diabetes. McCarthy et al. noted that inadequate glycemic control is related to poor academic achievement especially in children with HbA1C

greater than 10%. According to Jacquez et al. (2008), diabetic students who were able to access their diabetic equipment easily were able to administer necessary correction to abnormal blood glucose level adequately and rapidly than those without easy access to their equipment. Wagner et al. (2006) also indicated that students who were able to check their glucose level in the classroom had better glycemic control than those who had to leave the classroom for their diabetic care. When adequate glycemic control is not achieved, diabetes imposes additional taxing care needs, health care costs, and high risk of disabling complications (Ali, Bullard, Imperatore, Baker, & Gregg, 2012). Research indicates that adequate glycemic control reduce children's risk of developing chronic complications, as well as make them feel healthier, be more cheerful, and more useful in the school (NDPE, 2010).

Conceptual Model/Theoretical Framework

The initial step in defining how to implement strategies in order to have the greatest chance of having a successful program is to have a strong theoretical or conceptual framework (Gifford et al., 2013). The Stevens star model of knowledge transformation consists of five phases (Stevens, 2015). Refer to Figure 1 below. The first stage is the discovery research. Under this stage, new knowledge is established by the use of traditional research designs to conduct research studies. The second stage is the evidence summary stage, which is the initial stage in the evidence based-practice process. In this stage, the body of knowledge derived from research investigation was construed into a distinct, significant scientific statement. The third stage is the translation of guidelines. Under this stage, the knowledge derived was used to establish practice guideline that can be used in providing optimal care to children with diabetes in the school environment. The fourth stage, which is the practice integration stage, allows the

new evidence based practice guideline to be evaluated and modified based on feedback from the participants. The fifth and final stage is the process, outcome evaluation stage, which will allow for the appraisal of the final guideline before implementation. The model below shows how knowledge transformation moves through a circular process, from discovery to summary, translation, integration, and finally evaluation by systematically making evidence-based practice processes operational (Stevens, 2015).

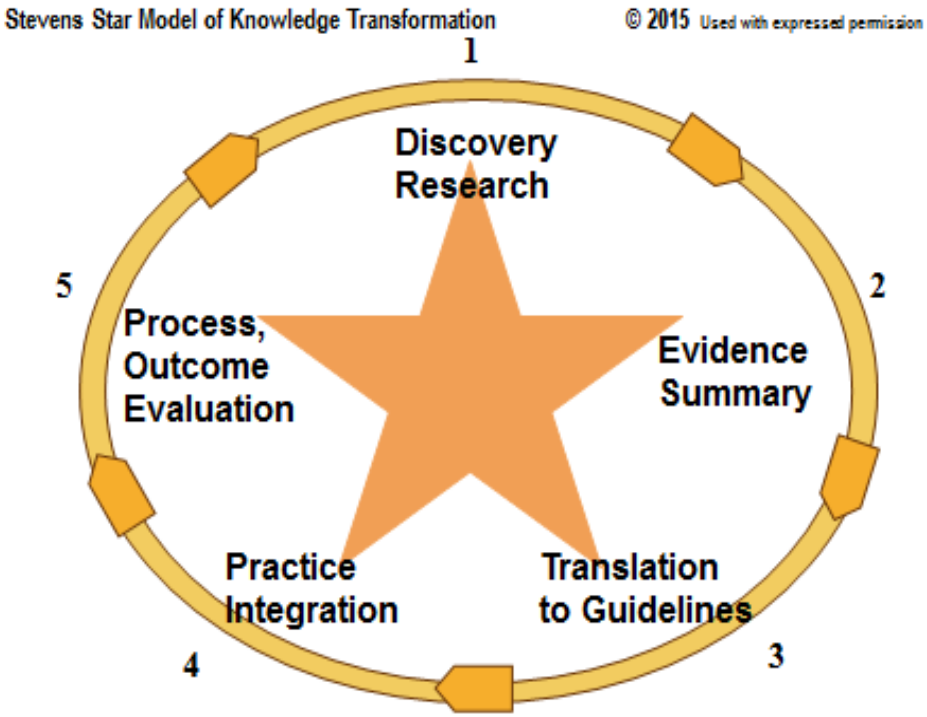


Figure 1. Stevens Star Model of Knowledge Transformation. Copyrighted material (Stevens, 2015). Reproduced with expressed permission.

Summary

Evidence based literatures review has demonstrated the significance of establishing evidence based practice guidelines as a standardized process of providing

diabetic care at school to ensure a safe learning school environment. Also, to assist the students with diabetes to achieve better long-term and best academic outcome (ADA, 2003). In order to achieve suitable diabetic management for these children, it is essential that there is collaboration between the health care team, parents and the school personnel with the school nurse in charge of coordinating the care (ADA, 2003). In addition, when the school personnel have adequate understanding of diabetes, they are able to response appropriately in an emergency and offer a supportive environment to these students (NDPE, 2010). Establishing a general practice guideline will empower the school nurses to adequately coordinate care among the stakeholders involved and provide optimal care based on scientific studies to students with diabetes in the school (Silverstein et al., 2005). The review of literature contributed to the guideline creation and the content.

Section 3: Methodology

The purpose of this project was to develop an evidence-based guideline that would create a standardized process for school nurses to provide adequate diabetes management for students with diabetes in the school district. Based on the review of literature and guided by my experience as one of the district nurses, I established what needed to be included in the guideline. Careful analysis of data from the literature was used to support the strength and soundness of the guideline that was developed. To confirm that the necessary changes were made on the guideline to ensure accuracy and guarantee that the guideline was user friendly, I asked end users to review and critique the guideline before implementation.

Population and Sampling

A team of experts was assembled to critique the guideline. The team consisted of 10 nurses as participants. Seven of the nurses had master's degrees and three had Bachelor of Science degrees. All had several years of experience in different areas of nursing in addition to school nursing. Ten formative questionnaires were distributed to the team of experts who were also considered the end users. Nine nurses completed and returned the questionnaire within the allocated time. The same participants were also included in the summative group. One participant did not return the survey within allotted time and therefore was excluded from the final analysis. To evaluate the guideline, the Appraisal of Guidelines for Research & Evaluation (AGREE II) instrument was used (Appendix B). The AGREE II instrument was established by a group of researchers to provide a systematic framework to evaluate guideline quality and has been authenticated for appraising clinical practice guidelines (CPG) relating to health care (MacDermid et

al., 2005). According to Latimer-Cheung et al. (2010), the AGREE II tool is regarded as "the international gold standard for guideline assessment, development, and reporting" (p. 1) in clinical practice.

Data Collection

To obtain feedback on the guideline that was developed to create a standardized process for the district nurses to use for diabetic management in the school environment, a team of experts was assembled. This team included the nurses employed by this district who were also the end users. A letter of invitation (Appendix D) was sent via the district email along with an implied consent form (IRB number 2016.06.0811:21:21-05'00'). Participants were given two days to ask questions or voice their concerns. After the review and validation of the questionnaire (Appendix A) by a team of diabetic experts, the questionnaires and the AGREE II Instrument were precoded so that they could be matched up upon return. Precoded surveys were included in the package in addition to an overview of the DNP project. Participants were given three days to complete and return surveys to a designated area. Contact information and instructions on how to complete the task were also provided to the participants. The packages were hand delivered to the participants individually to maintain privacy.

After a thorough review of the feedback from the nine participants from the formative group, the guideline was revised and distributed to the 10 participants in the summative group. Instructions were given and participants were given two days to ask questions or share concerns. Nine out of ten participants completed the survey within the allotted time. Based on the precoding, the same participant did not return the formative questionnaire and the AGREE II instrument and was excluded from the final analysis. To

maintain privacy, acceptance to participate was determined by returning the completed survey. Also, participants were not required to include personal information on the paper survey, and were allowed to complete the survey in a private location of their choice. Security envelops were provided so participants could return sealed completed surveys in a box in a central location. Risks and benefits of participating in the study were listed on the consent forms, including very minor discomfort that could be encountered in daily life.

Data Analysis

To analyze the guideline developed to create a standardized process for the school nurses to provide adequate diabetes management for students with diabetes in the school district, two processes were used: the formative guideline questionnaire and the AGREE II instrument. The formative guideline questionnaire was used to conduct the initial assessment with the purpose of obtaining feedback, which was used to make revisions and improvements to the draft guideline (Teaching Excellence & Educational Innovation, n.d.). To appraise the quality of the guideline, the AGREE II Instrument was used. The AGREE II Instrument is an evaluation tool that was developed to be used globally to evaluate the usability, procedural thoroughness, and quality of a practice guideline (Brouwers et al., 2010). The AGREE II instrument (Appendix B) consists of 23 items divided into six domains. Each item addresses the quality of different parts of the guideline. In addition, the AGREE II instrument contains two overall assessment pieces that allow the evaluator to offer final appraisal of the practice guideline (Brouwers et al., 2010). The AGREE II instrument was distributed to the participants to complete, and the data obtained from the nine nurses who completed the instrument were analyzed. The two

overall assessment pieces provided the final analysis and acceptance of the general guideline (Appendix C).

Project Evaluation Plan

As soon as the validity of the guideline was approved, the final practice guideline was drafted and prepared for implementation. Included in the AGREE II instrument was a general assessment of whether the guideline should or should not be implemented. The quality of the guideline was determined by 100% approval based on the score of each nurse who participated in the study. The percentage score was obtained from analyzing each domain of the AGREE II instrument and the overall guideline assessment completed by the participants. A high percentage score indicates a high quality guideline, and low percentage score indicates a low quality guideline (Brouwers et. al, 2010). Guideline recommendation for use was established based on the response of the nine final participants with yes, yes with modification, or no. All nine participants (100%) recommended guideline for use with yes.

Summary

Based on the review of literature and the feedback provided by a team of experts, I developed an evidence-based practice guideline for the care of students with diabetes in the school district. The guideline (Appendix C) is now ready to be used as a standardized process for the district nurses to manage diabetes in the school environment.

Section 4: Findings, Discussion, and Implications

Children with diabetes are entitled to a safe school environment, to achieve academic success, and to attain adequate growth and development. To accomplish this, they must be able to balance their meals, medications, and activity levels to prevent complications that could result from inadequate glycemic control (Kaufman, 2009). The school nurse, who has the necessary skills and knowledge required, will be responsible for coordinating, collaborating, and managing the care of students in achieving adequate diabetic self-management (NASN, 2012). I created a guideline to establish a standardized process for the school nurse to achieve that goal. This section presents findings of the project, which was to develop a guideline for care of students with diabetes in the school district. A two-step process including a formative and summative evaluation by a group of experts was used to appraise the quality of the guideline.

Summary and Evaluation of Findings

The formative guideline questionnaires, after being reviewed and validated by diabetic experts, were distributed to a team of experts which consisted of 10 district nurses. Seven nurses had master's degrees and three had Bachelor of Science degrees, and all had many years of nursing experience. A total of 10 questionnaires were distributed, and nine responses were received within the allocated time. As a result, nine questionnaires were included in the final review. The formative guideline questionnaire included seven questions. The questions and participant responses are shown in Table 1.

Table 1

Formative Guideline Questionnaire Data

Q1 Do you have a clear understanding of each statement contained in this guideline? If not, please provide detailed statement describing any area that you find to be unclear. Please provide any suggestion on how to make it clear and understandable for you.

Appraisers	Response		
	Yes	No	Comment
Appraiser 1	X		
Appraiser 2	X		
Appraiser 3	X		
Appraiser 4	X		
Appraiser 5	X		
Appraiser 6	X		
Appraiser 7	X		
Appraiser 8	X		
Appraiser10	X		1. I would suggest merging intro & impact - too long & similar. Relate to effect on student. 2. Under training- training all staff may be unrealistic.

Q2. Do you think that use of the guideline will achieve the following stated goal and objectives?

a. Assist the school nurse to coordinate and effectively train non-medical school personnel on diabetes management and ensure that students with diabetes have a safe learning environment.

b. Assist students with diabetes in achieving suitable diabetic management.

c. Provide a standardized process for the school nurses to provide adequate diabetes management for students with diabetes in the school.

If no, please provide feedback on how to modify it so that the goal and objectives will be achieved.

Appraisers	Response		
	Yes	No	Comment
Appraiser 1	X		
Appraiser 2	X		
Appraiser 3	X		
Appraiser 4	X		
Appraiser 5	X		
Appraiser 6	X		
Appraiser 7	X		
Appraiser 8	X		
Appraiser10	X		

Q3. Does the guideline cover all key content areas? If no, please provide information on areas that are

omitted and that you would like included or addressed.

Appraiser	Response		
Appraiser #	Yes	No	Comment
Appraiser 1	X		
Appraiser 2	X		
Appraiser 3	X		
Appraiser 4	X		
Appraiser 5	X		
Appraiser 6	X		
Appraiser 7	X		
Appraiser 8	X		
Appraiser10		X	1. Maybe more description about the disease & types - like a fact sheet. 2. The DMMP suggested form is very long- shorter

Q4. Is the guideline appropriate for the settings? If not, please provide suggestion or feedback.

Appraisers	Response		
	Yes	No	Comment
Appraiser 1	X		
Appraiser 2	X		
Appraiser 3	X		
Appraiser 4	X		
Appraiser 5	X		
Appraiser 6	X		
Appraiser 7	X		
Appraiser 8	X		
Appraiser10	X		

Q5. Do you see any barrier to implementing this guideline? If so, please provide feedback on possible issues that may arise during implementation.

Appraisers	Response		
	Yes	No	Comment
Appraiser 1		X	
Appraiser 2		X	
Appraiser 3		X	
Appraiser 4		X	
Appraiser 5		X	
Appraiser 6		X	

Appraiser 7		X
Appraiser 8		X
Appraiser10		X

Q6. Do you find this guideline easy to follow?

Appraisers	Response		
	Yes	No	Comment
Appraiser 1	X		
Appraiser 2	X		
Appraiser 3	X		
Appraiser 4	X		
Appraiser 5	X		
Appraiser 6	X		
Appraiser 7	X		
Appraiser 8	X		
Appraiser10	X		

Q7. Are there any areas you would like to modify or change or added to the guideline? If yes, please state area and provide suggestion

Appraisers	Response		
	Yes	No	Comment
Appraiser 1	X		Include table of content, Shorter DMMP, include ed. code
Appraiser 2	X		Combine hyper and Hypo emergency plan, Shorter DMMP, Ed code
Appraiser 3	X		Shorter DMMP, Include table of content, include ed. code
Appraiser 4	X		Combine Hypo & Hyperglycemia care plan, Shorter DMMP, ed. code
Appraiser 5	X		Include table of content, DMMP too long, make it shorter, ed. code
Appraiser 6	X		Shorter DMMP, Combine the hypo & hyper emergency plan
Appraiser 7	X		DMMP too long, make form shorter, include ed. code
Appraiser 8	X		Make DMMP shorter, too long, ed. code should be included
Appraiser10	X		Merge & condense into & impact areas. Shorter DMMP. Ed code
			Include fact sheet that can be also used in training. Limit training to those in contact with student. Include education code.

After careful examination of the responses from the formative group, the original guideline was edited and revised. There was consensus among the participants that the guideline would create a standardized process for the school nurses to provide adequate diabetes management for students with diabetes in the school district. After the revision of the guideline, it was then distributed to the summative group for final appraisal.

The summative evaluation included nine participants who were credentialed school nurses employed by the school district, and who were also the end users. These participants completed and returned the AGREE II instrument within the allotted time after evaluating the final guideline. Domain 1 addressed the scope and purpose of the guideline. This section included three questions that were applicable to this project and were scored by all participants. A score of 100% was reported in this domain. Domain 2 addressed stakeholders' involvement and included three questions that were applicable to this project. Participants reported a 97.5% score in this domain. Domain 3 addressed rigor of development and included eight items. One of the statements was not applicable to this project; therefore, no response was obtained and the score was adjusted accordingly. In this domain, a 99.7% score was obtained. Domain 4 addressed the clarity and presentation of the project and included three statements. A 100% score was obtained. Domain 5 addressed applicability and included four statements. One of the statements was not applicable, and therefore no response was obtained. Adjustment was made to the domain and a 97.5% score was obtained. Domain 6 addressed editorial independence and included two statements, but only one was applicable to this project. No response was obtained for nonapplicable item, and a sore of 100% was obtained with appropriate adjustment made. Two additional items were included in the overall guideline

assessment. For the first (rate the overall quality of this guideline), a 98.1% score was obtained. For the second (I would recommend this guideline for use), participants recommended the guideline with 100% approval score without modification. Domains and scores are presented in Table 2.

Table 2

AGREE II Data Summary

AGREE II Domain	Percentage (%) Score
Domain1:Scope and Purpose	100%
Domain 2: Stakeholder Involvement	97.5%
Domain 3: Rigor of Development	99.7%
Domain 4: Clarity and Presentation	100%
Domain 5: Application	97.5%
Domain 6: Editorial Independence	100%
Overall Guideline Assessment	98.1%
Recommend This Guideline for use	100% Yes without modification

Discussion of Findings in the Context of Literature and Framework

Ten district nurses were invited to participate in this study. A total of nine responded by completing and returning the surveys in the allotted time. Incorporation of the district nurses' recommendation and the significant data obtained from review of literature aided in the development and finalization of an evidence-based guideline that was created to provide a standardized process for school nurses to adequately manage diabetes in the school environment. The developed guideline for the care of students with diabetes in the school district was necessary because it would allow school nurses to effectively coordinate and train nonmedical school personnel on diabetes management. Furthermore, it would ensure the safety of diabetic students and diminish the disruption of academic activities due to diabetic emergencies. Moreover, it would ensure that these

students could achieve academic success and full participation in school activities. It would also help to minimize the long-term health effects of diabetes.

The Stevens star model of knowledge transformation, which consists of five phases of knowledge transformation, was used as the framework to guide this project. The first stage was the discovery research in which new data were identified by the use of traditional research designs in research studies. In the second stage, the evidence summary stage, the information derived from the literature review was presented in a scientific statement. In the third stage, the evidence derived from the literature review was used to establish a practice guideline for the care of children with diabetes in the school district. In the fourth stage, the guideline was modified based on the responses obtained from the formative questionnaire. In the final stage, the outcome evaluation stage, the summative group appraised the final guideline using the AGREE II instrument. The responses obtained from the formative group confirmed the need for the guideline, and the 100% approval by the summative group enhanced the validity of the guideline.

Implications for Social Change in Practice

The established guideline will have a major impact on the manner in which the district nurses manage diabetes in the school. The guideline will provide a standardized process for the district nurses to coordinate and manage students with diabetes in the school. The guideline recognizes the role of the school nurse in assisting students with diabetes in attaining their potential. Research indicated that children who lacked adequate control of type 1diabetes experienced substantial improvement in blood sugar when the school nurse managed the blood sugar checks and insulin administration (Nguyen et al., 2008). The school nurse can have an impact not only on health outcomes but also on

academic performance and the general well-being of the diabetic students. According to the NDPE (2010), adequate glycemic control not only decreases these children's risk of developing chronic complications related to DM but also assists them in feeling healthier, happier, and more productive in school. For the school districts to be in compliance with ADA mandates and other federal and state laws, they must rely on the assistance of nonmedical personnel who have limited diabetes knowledge to assist in diabetes care in the school. These staff may have negative views about being responsible for the care of diabetic students. With proper training and oversight, these attitudes can be changed, which can ensure better health and safety of diabetic students.

Project Strengths and Limitation

This project has both strengths and limitations. One of the strengths is that the formative questionnaire was validated by several nondistrict diabetic experts prior to being distributed. The formative group included credential school nurses who had vast educational and nursing experience. All of the participants included in both the formative and summative group were also the end users, which added strength to the modification and appraisal of the guideline. Limitations of this project were that it was conducted in a local school district in the West Coastal region of the United States and may not represent the entire population. Also, the guideline may not be generalized due to the small sample of participants who critiqued it.

Analysis of Self

As a scholar practitioner and a project developer, I was able to recognize a problem in my practice environment, scrutinize the identified problem, and research ways it can be solved. As a practicing school nurse, I was able to identify some of the

challenges the district nurses encounter daily in an attempt to coordinate and effectively manage students with diabetes in the school environment due to lack of standardization or guideline. Although I have worked hard to put this project together, I must acknowledge the support I received from my doctor of nursing practice (DNP) committee and my colleagues at the district. I remained unbiased, and I appreciated all the support and responses I received during the project. This feedback led to revisions being made to the initial guideline, which were instrumental in attaining 100% approval of the final guideline without modification by the summative group.

Experiencing this process has taught me a lot about the steps and skills involved in conducting an evidence-based project (EBP). This process has taught me how to navigate and gather resources, plan, implement, and evaluate project findings, which will make it easier for me to conduct future projects. A lot of work remains to be done in the area of diabetes management in the school setting. To meet the needs of diabetic students in accordance with ADA mandates, school nurses are required to rely on the assistance of nonmedical staff. Often, these staffs have limited diabetes knowledge and negative views about being responsible for the care of diabetic students. It is my hope that the implementation of this EBP in the school setting will add to the professional growth of the school personnel. Also, this project may create a positive impact on the stakeholders and equip them with the knowledge and skills needed to provide adequate diabetes care for diabetic students.

Summary

The developed guideline for the care of students with diabetes in the school will provide a standardized process for school nurses to coordinate and manage students with

diabetes in the school. The guideline is comprehensive yet concise, and addresses all stated objectives and crucial aspects of diabetic care in the school. The guideline will allow the school to provide a safe environment for diabetic students. In addition, it will allow nurses to help diabetic students achieve adequate diabetic management, which will lead to improved academic and health outcomes.

Section 5: Scholarly Product

Dissemination of scholarly project outcomes is an essential component of DNP education (Zaccagnini & White 2012). Dissemination involves communicating and interacting with health care audiences and policymakers to facilitate research uptake so decisions can be made regarding current practice (Wilson, Petticrew, Calnan, & Nazareth, 2010). Disseminating the findings for an EBP is critical to improving health outcomes. In addition, dissemination allows the information to be captured by individuals with the ability to effect change in various organizations and on various levels. There are several ways in which the intended audience can be informed of a study finding, which include but are not limited to the use of posters, oral presentations, and journal publications (Oermann & Hays, 2011; White & Dudley-Brown 2012).

Because my DNP project involves developing a guideline for the care of students with diabetes in the school, the end product of my project (Appendix J) could be disseminated through professional publications. One of the journal publications that I intend to publish the findings of my project is the *Journal of School Nursing* (*JOSN*). The *JOSN* is the official journal of the NASN. This journal provides a forum for the improvement of the health of school children and school communities. The *JOSN* strives to involve a broad range of clinicians, scholars, and community leaders in a continuing exchange of information through scholarly articles both from the nursing perspectives and expertise from other disciplines that may contribute to the health and well-being of students (Cowell, 2014). The *JOSN* is dedicated to communicating information related to the role of the school, its environment, and personnel in helping children achieve optimal growth and development. The *JOSN* focuses on areas such as health education; physical

education; health services; nutrition services; counseling, psychological, and social services; and a healthful school environment. The *JOSN* involves school administrators, nurses, dieticians, and other health care professionals working collaboratively with students, parents, and communities to achieve the common goal of providing services, programs, and environments necessary to promote healthy children (American School Health Association, 2014).

Another journal in which the findings of this project could be published is the *Diabetes Care* journal. *Diabetes Care* is a journal geared toward the health care practitioner to increase knowledge, stimulate research, and promote better management of people with diabetes (ADA, 2016).

In addition to journal publication, I will disseminate my findings using oral presentation with visual aids such as PowerPoint presentations during staff meetings that include the stakeholders such as district nurses, teachers, and administrators. Oral presentation with PowerPoint allows the researcher to present material in a clear, logical, concise, focused manner and to answer questions that the audience may have. In addition, this approach allows images to be added, which may attract and maintain the audience's attention (Bell, 2015). According to Walling (n.d.), 20% of audience is able to retain what they hear, 30% are able to retain what they see, and 50% are able to retain what they both see and hear. Also, a copy of the slides can be provided to stakeholders in case they are not able to attend the presentation. According to Bourne (2007), the guidelines for a good oral presentation include knowing the audience (e.g., background and knowledge level) and acknowledging the audience's contribution to the project. Because my project involved developing a guideline, the oral presentation will provide an opportunity to

acknowledge and thank the participant nurses for their contribution. In addition, knowing these employees' background and knowledge levels will allow me to be more prepared for the presentation and answer whatever questions they may have.

Conclusion

The developed guideline for the care of students with diabetes in the school will provide a standardized process for school nurses to manage students with diabetes in the school. The guideline is comprehensive yet concise, and addresses all stated objectives and crucial aspects of diabetic care in the school. The guideline will allow the school to provide a safe environment for diabetic students. In addition, it will allow nurses to help diabetic students achieve adequate diabetic management, which will lead to improved academic and health outcomes.

References

Ali, M. K., Bullard, K. M., Imperatore, G., Baker, L., & Gregg, E. W. (2012). Characteristics associated with poor glycemic control among adults with self-reported diagnosed diabetes—National Health and Nutrition Examination Survey, United States, 2007–2010. *Morbidity and Mortality Weekly Report (MMWR), 61*(02), 32-37. Retrieved from http://www.cdc.gov/mmwr/preview/mmwrhtml/su6102a6.htm

American Association of Diabetes Educators. (2008). Position statement: Management of children with diabetes in the school setting. *The Diabetes Educator, 34*(3), 439-443. doi:10.1177/0145721708317873

American Diabetes Association. (2003). Care of children with diabetes in the school and day care setting. *Diabetes Care, 26,* s131-s135. Retrieved from http://care.diabetesjournals.org/content/26/suppl_1/s131.full

American Diabetes Association. (2011). Diabetes care in the school and day care setting. *Diabetes Care, 34*(Supp 1), S70-S74. doi:10.2337/dc11-s070

American Diabetes Association. (2014a). The cost of diabetes. Retrieved from http://www.diabetes.org/advocacy/news-events/cost-of-diabetes.html

American Diabetes Association. (2014b). Diabetes care in the school and day care setting. *Diabetes Care, 37*(Supp 1), S91-S96. doi:10.2337/dc14-s091

American Diabetes Association. (2015a). Standards of medical care in diabetes-2015. Retrieved from http://professional.diabetes.org/resourcesforprofessionals.aspx?cid=84160

American Diabetes Association. (2015b). Statistics about diabetes. Retrieved from

http://www.diabetes.org/diabetes-basics/statistics/?loc=db-slabnav

American Diabetes Association. (2016). Diabetes care instructions for authors. Retrieved from http://care.diabetesjournals.org/content/instructions-for-authors

American School Health Association. (2014). Journal of School Health. Retrieved from http://www.ashaweb.org/resources/journal-of-school-health/

Amillategui, B., Calle, J. R., Alvarez, M. A., Cardiels, M. A., & Barrio, R. (2007). Identifying the special needs of children with type 1 diabetes in the school setting: An overview of parents' perception. doi:10.1111/j.1464-5491.2007.02250.x

Amillategui, B., Mora, E., Calle, J. R., & Giralt, P. (2009). Special needs of children with type 1 diabetes at primary school: Perceptions from parents, children, and teachers. *Pediatric Diabetes, 10*(1), 67-73. doi:10.1111/j.1399-5448.2008.00457.x

Australasian Pediatric Endocrine Group (APEG). (2005). Clinical practice guidelines: Type 1diabetes in children and adolescents. Retrieved from http://www.nhmrc.gov.au/_files_nhmrc/file/publications/synopses/cp102.pdf

Bell, K. W. (2015). What are benefits of powerpoint? Retrieved from http://smallbusiness.chron.com/benefits-powerpoint-55958.html

Bourne, P. E. (2007). Ten simple rules for making good oral presentations. *PLoS Computational Biology*, *3*(4), e77. doi:10.1371/journal.pcbi.0030077

Brouwers, M., Kho, M. E., Browman, G. P., Burgers, J. S., Cluzeau, F., Feder, G.,…Zitzelsberger, L. (2010). For the AGREE Next Steps Consortium. AGREE II: Advancing guideline development, reporting and evaluation in healthcare. *Canadian Medical Association Journal, 182*, 839-842. doi:10.1503/090449

Butler, S., Fekaris, N., Pontius, D., & Zacharski, S. (2012). Diabetes management in the school setting. Retrieved from http://www.nasn.org/PolicyAdvocacy/PositionPapersandReports/NASNPositionStatementsFullView/tabid/462/smid/824/ArticleID/22/Default.aspx

California School Nurses Organization. (2010). Position statement school nurse assignment. Retrieved from http://www.csno.org/uploads/1/7/2/4/17248852/school_nurse_assignment-2010.pdf

Centers for Disease Control and Prevention. (2001). Strategies for reducing morbidity and mortality from diabetes through health-care system interventions and diabetes self-management education in community settings. *MMWR, 50*(16). Retrieved from http://www.cdc.gov/mmwr/PDF/rr/rr5016.pdf

Centers for Disease Control and Prevention. (2011). *National diabetes fact sheet: General information and national estimates on diabetes in the United States.* Atlanta, GA: U.S. Department of Health and Human Services.

Centers for Disease Control and Prevention. (2012). Increasing prevalence of diagnosed diabetes — United States and Puerto Rico, 1995–2010. Retrieved from http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6145a4.htm

Centers for Disease Control and Prevention. (2014a). Basics about diabetes. Retrieved from http://www.cdc.gov/diabetes/basics/diabetes.html

Centers for Disease Control and Prevention. (2014b). Estimates of diabetes and its burden in the United States. Retrieved from http://www.cdc.gov/diabetes/pdfs/data/2014-report-estimates-of-diabetes-and-its-burden-in-the-united-states.pdf

Centers for Disease Control and Prevention. (2015). Rates of diagnosed diabetes per 100 civilian, non-institutionalized population, by age, United States, 1980–2014. Retrieved from http://www.cdc.gov/diabetes/statistics/prev/national/figbyage.htm

Cowell, J. M. (2014). The journal of school nursing. Retrieved from https://us.sagepub.com/en-us/nam/the-journal-of-school-nursing/journal201907

Dabelea, D., Mayer-Davis, J., Saydah, S., Imperatore, G., Linder, B., Divers, J.,…Hamman, R. F. (2014). Prevalence of type 1 and type 2 diabetes among children and adolescents from 2001 to 2009. *Journal of the American Medical Association (JAMA), 311*(17), 1778-1786. doi:10.1001/jama.2014.3201

Faro, B., Ingersoll. G., Fiore, H., & Ippolito, K. (2005). Improving students' diabetes management through school-based diabetes care. *Journal of Pediatric Health Care*, *19*, 301-308. doi:10.1016/j.pedhc.2005.03.004

Fineout-Overholt, E., Williamson, K., Gallagher-Ford, L., Melnyk, B. M., & Stillwell, S. 2011). Evidence-based practice, step by step: Following the evidence: Planning for sustainable change. *The American Journal of Nursing, 111*(1), 54-60. doi:10.1097/01.NAJ.0000393062.83761.c0

Glaab, L.A., Brown, R., & Daneman, D. (2005). School attendance in children with Type1 diabetes. *Diabetic Medicine, 22*, 421-426. doi:10.1111/j.1464–5491.2005.01441.x.

Gawwad, E. S. A. (2008). Teacher's knowledge, attitudes and management practices about diabetes care in Riyadh's schools. *The Journal of the Egyptian Public Health Association*, *83*(3), 205-222. Retrieved from

http://www.epha.eg.net/pdf/n3-4-2008/3-Teachers%20diabetes-HIPH-ensaf_Final.pdf

Gifford, W.A., Graham, I. D., & Davies B. L. (2013). Multi-level barriers analysis to promote guideline based nursing care: a leadership strategy from home health care. *Journal of Nursing Management, 21*,762–770. doi:10.1111/jonm.12129

Goran, M. I., Lane, C., Toledo-Corral, C., & Weigensberg, M. J. (2008). Persistence of pre-diabetes in overweight and obese Hispanic children association with progressive insulin resistance, poor β-cell function, and increasing visceral fat. *Diabetes, 57*(11), 3007-3012. doi:10.2337/db08-0445

Grove, S. K., Burns, N., & Gray, J. R. (2013). *The practice of nursing research: Appraisal, synthesis, and generation of evidence* (7th ed.). St. Louis, MO: Saunders Elsevier.

Hayes-Bohn, R., Neumark-Sztainer, D., Mellin, A., & Patterson, J. (2004). Adolescent and parent assessments of diabetes mellitus management at school. *Journal of School Health, 74*(5), 166-169. doi:10.1111/j.1746-1561.2004.tb08215.x

HealthyPeople.gov (2014). Diabetes. Retrieved from http://www.healthypeople.gov/2020/topics-objectives/topic/diabetes

Hellems, M.A. & Clarke, W.L. (2007). Safe at school: a Virginia experience. *Diabetes Care, 30,* 1396–1398. doi:10.2337/dc07-0121

Jacquez, F., Stout, S., Alvarez-Salvat, R., Fernandez, M., Villa, M., Sanchez, J.,… Delamater, A. (2008). Parent perspectives of diabetes management in schools. *The Diabetes Educator, 34*(6), 996–1003. doi:10.1177/0145721708325155

Kaufman, F. (2009). *Medical management of type 1 diabetes* (5th ed.). Alexandria, VA:

American Diabetes Association.

Latimer-Cheung, A. E., Rhodes, R. E., Kho, M. E., Tomasone, J. R., Gainforth, H., L., Kowalski, K.,...The Canadian Physical Activity Guidelines Messaging Recommendation Workgroup (2013). Evidence-informed recommendations for constructing and disseminating messages supplementing the new Canadian Physical Activity Guidelines, *BioMed Central(BMC) Public Health, 13*, 419. doi:10.1186/1471-2458-13-419

Lucha-Lopez, M. O., Lucha-Lopez, A. C., Vidal-Peracho, C., Tricas-Moreno, M. J. Estebanez-De Miguel, E, Salavera-Bordas, C., & Hidalgo-Garcia, C. (2014). Analysis of a sample of type 2 diabetic patients with obesity or overweight and cardiovascular risk: A cross sectional study in Spain. *BMC Research Notes, 7*, 48. doi:10.1186/1756-0500-7-48

MacDermid, J. C., Brooks, D., Solway, S., Switzer-McIntyre, S., Brosseau, L, & Graham, I. D. (2005). Reliability and validity of the AGREE instrument used by physical therapists in assessment of clinical practice guidelines. *BMC Health Services Research*, *5*, 18. doi:10.1186/1472-6963-5-18

Mandali, S. L. & Gordon, T. A. (2009). Management of type 1 diabetes in schools: Whose responsibility? *The Journal of School Health, 79*(12), 599-601. doi:10.1111/j.1746-1561.2009.00456.x

McCarthy, A. M., Lindgren, S., Mengeling, M. A., Tsalikian, E., & Engvalle, J. (2003). Factors associated with academic achievement in children with type 1diabetes. *Diabetes Care*, *26*(1), 112-117. doi:10.2337/diacare.26.1.112

Montebello Unified School District. (n.d.). Fact sheet 2014-2015. Retrieved from

http://montebellousdca.schoolloop.com/file/1294471603772/1295706265378/3801146927190452726.pdf

Nabors, L., Lehmkuhl, H., Christos, N., & Andreone, T. L. (2003). Children with diabetes: Perceptions of supports for self-management at school. *Journal of School Health, 73*(6), 216-221. doi:10.1111/j.1746-1561.2003.tb06563.x

National Association of School Nurses. (2012). Diabetes management in the school setting. Retrieved from http://www.nasn.org/PolicyAdvocacy/PositionPapersandReports/NASNPositionStatementsFullView/tabid/462/ArticleId/22/Diabetes-Management-in-the-School-Setting-Adopted-January-2012

National Diabetes Education Program. (2010). Helping the student with diabetes succeed: A guide for school personnel. Retrieved from http://www.ndep.nih.gov/publications/PublicationDetail.aspx?PubID=97&redirect=true#main

Nguyen, T., Mason, K., Sanders, C., Yazdani, P., & Heptulla, R. (2008). Targeting blood glucose management in school improves glycemic control in children with poorly controlled type 1 diabetes mellitus. *Journal of Pediatrics, 153*(4), 575-578. doi:10.1016/j.jpeds.2008.04.066

Oermann, M. H., & Hays, J. C. (2011). *Writing for publication in nursing* (2nd ed.). New York, NY: Springer publishing Company.

Pansier, B. & Schulz, P. J. (2015). School-based diabetes interventions and their outcomes: A systematic literature review. *Journal of Public Health Research, 4*, 467. doi:10.4081/jphr.2015.467

Parent, K. B., Wodrich, D. L., & Hasan, K. S. (2009). Type 1 diabetes mellitus and school: a comparison of patients and healthy siblings. *Pediatric Diabetes, 10*(8), 554-562. doi:10.1111/j.1399-5448.2009.00532.x

Robert Wood Johnson Foundation. (2010). Unlocking the potential of school nursing: Keeping children healthy, in school, and ready to learn. Retrieved from https://www.abn.alabama.gov/UltimateEditorInclude/UserFiles/docs/school%20nurse/2010_11_08_13_06_53.pdf

Schwartz, F. L., Denham, S., Heh, V., Wapner, A., & Shubrook, J. (2010). Experiences of children and adolescents with type 1 diabetes in school: survey of children, parents, and schools. *Diabetes Spectrum, 23*(1), 47-55. doi:10.2337/diaspect.23.1.47

Silverstein, J., Klingensmith, G., Copeland, K., Plotnick, L., Kaufman, F., Lafeel, L.,... Clark, N. (2005). Care of children and adolescents with type 1 diabetes. *Diabetic Care, 28*(1), 186-212. doi:10.2337/diacare.28.1.186

Smith, C. T., Chen, A. M., Plake, K. S., & Nash, C. L. (2012). Evaluation of the impact of diabetes education curriculum for school personnel on disease knowledge and confidence in caring for students. *Journal of School Health, 82*(10), 449-456. doi:10.1111/j.1746-1561.2012.00721.x

Stevens, K. R. (2015). *Stevens star model of knowledge transformation*. Center for advancing clinical excellence. The University of Texas health science center San Antonio.

Teaching Excellence & Educational Innovation. (n.d.). What is the difference between formative and summative assessment? Retrieved from

https://www.cmu.edu/teaching/assessment/basics/formative-summative.html

Wagner, J., Heapy, A., James, A., & Abbott, G. (2006). Brief report: glycemic control, quality of life, and school experiences among students with diabetes. *Journal of Pediatric Psychology*, *31*(8), 764-769. doi:10.1093/jpepsy/jsj082

Walling, A. (n.d.). Dissemination of findings: Presentations and publications. Retrieved from http://wichita.kumc.edu/Documents/wichita/wcgme/Disseminating-Your-Findings-MODULE.pdf

Wang, Y., Brown, S. A. & Horner, S. D. (2010). School-based lived experiences of adolescents with type 1 diabetes: A preliminary study. *The Journal of Nursing Research, 18*(4), 258- 265. doi:10.1097/jnr.0b013e3181fbe107

West, E. & Holmes, J. (2014). The role of the school nurse in the management of diabetes: Assessing a position statement. *British Journal of School Nursing, 9*(1). 30-33. doi:10.12968/bjsn.2014.9.1.30

White, K. M. & Dudley-Brown, S. (2012). *Translation of evidence into nursing and health care practice.* New York, NY: Springer publishing Company.

Wilson, P. M., Petticrew, M., Calnan, M. W. & Nazareth, I. (2010). Disseminating research findings: What should researchers do? A systematic scoping review of conceptual frameworks. *Implementation Science*, *5*(91), 1-16. doi:10.1186/1748-5908-5-91

Zaccagnini, M. E., & White, K. W. (2012). *The doctor of nursing practice essentials: A new model for advanced practice nursing* (Laureate Education, custom ed.). Sudbury, MA: Jones & Bartlett.

Appendix A: Formative Guideline Questionnaire

Please keep the purpose of this guideline in mind when reviewing and providing feedback, which is to create a standardized process for the district nurses to coordinate and provide adequate diabetes management for students with diabetes in the school district. Please take time to review the guideline, provide a feedback and be free to add comments and or concern you may have.

Question	Yes	No	Comment
1. Do you have a clear understanding of each statement contained in this guideline? If not, please provide detailed statement describing any area that you find to be unclear. Please provide any suggestions on how to make it clear and understandable for you.			
2. Do you think that use of the guideline will achieve the following stated goal and objectives? a. Assist the school nurse to coordinate and effectively train non-medical school personnel on diabetes management and ensure that students with diabetes have a safe learning school environment. b. Assist students with diabetes in achieving suitable diabetic management. c. Provide a standardized process for the school nurses to provide adequate diabetes management for students with diabetes in the school. If no, please provide feedback on			

how to modify it so that the goal and objectives will be achieved.			
3. Does the guideline cover all key content areas? If no, please provide information on areas that are omitted and that you would like included or addressed.			
4. Is the guideline appropriate for the setting? If not, please provide suggestion or feedback.			
5. Do you see any barrier to implementing this guideline? If so, please provide feedback on possible issues that may arise during implementation.			
6. Do you find this guideline easy to follow?			
7. Are there any areas you would like to modify or change or added to this guideline? If yes, please state area and provide suggestion.			

Appendix B: AGREE II Instrument

AGREE II INSTRUMENT

DOMAIN 1. SCOPE AND PURPOSE

1. The overall objective(s) of the guideline is (are) specifically described.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree

Comments

2. The health question(s) covered by the guideline is (are) specifically described.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree

Comments

3. The population (patients, public, etc.) to whom the guideline is meant to apply is specifically described.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree

Comments

DOMAIN 2. STAKEHOLDER INVOLVEMENT

4. The guideline development group includes individuals from all relevant professional groups.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree

Comments

5. The views and preferences of the target population (patients, public, etc.) have been sought.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree

Comments

6. The target users of the guideline are clearly defined.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree

Comments

DOMAIN 3. RIGOUR OF DEVELOPMENT

7. Systematic methods were used to search for evidence.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree

Comments

8. The criteria for selecting the evidence are clearly described.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree

Comments

9. The strengths and limitations of the body of evidence are clearly described.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree

Comments

DOMAIN 3. RIGOUR OF DEVELOPMENT continued

10. The methods for formulating the recommendations are clearly described.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree

Comments

11. The health benefits, side effects, and risks have been considered in formulating the recommendations.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree

Comments

12. There is an explicit link between the recommendations and the supporting evidence.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree

Comments

DOMAIN 3. RIGOUR OF DEVELOPMENT continued

13. The guideline has been externally reviewed by experts prior to its publication.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree

Comments

14. A procedure for updating the guideline is provided.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree

Comments

DOMAIN 5. APPLICABILITY

18. The guideline describes facilitators and barriers to its application.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree

Comments

19. The guideline provides advice and/or tools on how the recommendations can be put into practice.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree

Comments

20. The potential resource implications of applying the recommendations have been considered.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree

Comments

DOMAIN 5. APPLICABILITY continued

21. The guideline presents monitoring and/or auditing criteria.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree

Comments

DOMAIN 6. EDITORIAL INDEPENDENCE

22. The views of the funding body have not influenced the content of the guideline.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree

Comments

23. Competing interests of guideline development group members have been recorded and addressed.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree

Comments

OVERALL GUIDELINE ASSESSMENT

For each question, please choose the response which best characterizes the guideline assessed:

1. Rate the overall quality of this guideline.

1 Lowest possible quality	2	3	4	5	6	7 Highest possible quality

2. I would recommend this guideline for use.

Yes	
Yes, with modifications	
No	

NOTES

Appendix C: Guideline

Guidelines for Care of Students with Diabetes

Table of Contents

PURPOSE

The incidence of diabetes continues to rise globally and as one of the chronic conditions, it has enormous health and economic impact on both individuals and the nation as a whole (CDC, 2012). Diabetes is one of the most common chronic diseases that affect school-aged children under the age of 20 (Dabelea et al. 2014). According to American Diabetes Association (ADA) (2003), most of these children attend some form of school or daycare. To ensure that these children have a safe school environment, it is essential that the school and student healthcare teams coordinate care that is individualized to the specific needs of the student.

The purpose of this guideline is to (a) empower the school nurses to provide optimal care based on scientific studies not just on mere assumptions (Silverstein et al., 2005); (b) assist in establishing a standardized process of providing care to diabetic students within this school district; and (c) establish the role and responsibility of those involved in the student's care. For these students to be safe, achieve better long-term and best academic outcomes, it is essential that they are able to balance their meals, medications and activity levels (ADA, 2003). School personnel need to be knowledgeable of the plan of care and actions to take if needed. Parents need to provide the school with necessary information and supplies needed to adequately care for these children. In addition, they have to work collaboratively with school personnel to ensure that the students have full participation in school activities and are safe in the school environment (ADA, 2003).

DIABETES FACT SHEET

Introduction

Diabetes mellitus (DM) is a group of diseases characterized by high levels of glucose in the blood resulting from defects in insulin production, insulin action, or both. Diabetes is associated with serious complications, but timely diagnosis and treatment of diabetes can prevent or delay the onset of long-term complications (damage to the cardiovascular system, kidneys, eyes, nerves, blood vessels, skin, gums, and teeth). New management strategies are helping children with diabetes live long and healthy lives.

Type 1 diabetes accounts for approximately 5% of all diagnosed cases of diabetes, but is the leading cause of diabetes in children of all ages. Type 1 diabetes accounts for almost all diabetes in children less than 10 years of age. Type 1 diabetes is an autoimmune disease in which the immune system destroys the insulin-producing beta cells of the pancreas that help regulate blood glucose levels. Onset can occur at any age. Early symptoms, which are mainly due to hyperglycemia, include increased thirst and urination, constant hunger, weight loss, and blurred vision. Children also may feel very tired.

As insulin deficiency worsens, ketones, which are formed from the breakdown of fat, build up in the blood and are excreted in the urine and breath. Increased ketones are associated with shortness of breath and abdominal pain, vomiting, and worsening dehydration. Elevation of blood glucose, acidosis, and dehydration comprise the condition known as diabetic ketoacidosis or DKA. If diabetes is not diagnosed and treated with insulin at this point, the individual can lapse into a life-threatening coma.

The basic elements of type 1 diabetes management are insulin administration (either by injection of insulin pump), nutrition management, physical activity, blood glucose testing, and the development of strategies to avoid hypoglycemia and hyperglycemia that may lead to DKA.
All people with diabetes are advised to avoid "liquid carbs (carbohydrates)" such as sugar-containing soda, sports or energy drinks, juices (including 100 percent fruit juice), and regular pancake syrup. These liquid carbs raise blood glucose rapidly, contain large amounts

of sugars in small volumes, are hard to balance with insulin, and provide little or no nutrition.

Children receiving a long-acting insulin analogue or using an insulin pump receive a rapid-acting insulin analogue just before meals, with the amount of pre-meal insulin based on carb content of the meal using insulin to carb ratio and a correction scale for hyperglycemia. Carb counting involves calculating the number of grams of carbohydrate, or choices of carbohydrate, the youth eats. Further adjustment of insulin or food intake may be made based on anticipation of special circumstances such as increased exercise and intercurrent illness. Children on these regimens are expected to check their blood glucose levels routinely before meals and at bedtime.

Type 2 diabetes used to occur mainly in adults who were overweight and older than 40 years. Now, as more children and adolescents in the United States become overweight or obese and inactive, type 2 diabetes is occurring more often in young people aged 10 or older. The increased incidence of type 2 diabetes in youth is a first consequence of the obesity epidemic among young people, and is a significant and growing public health problem. Results from the 2007-2008 National Health and Nutrition Examination Survey (NHANES), using measured heights and weights, indicate that an estimated 16 to 17 percent of children and adolescents ages 2 to 19 years had a BMI greater than or equal to the 95th percentile of the age- and sex-specific BMI- about double the number of two decades ago.

The first stage in the development of type 2 diabetes is often insulin resistance, requiring increasing amounts of insulin to be produced by the pancreas to control blood glucose levels. Type 2 diabetes usually develops slowly and insidiously. Some children or adolescents with type 2 diabetes may show no symptoms at all. In others, symptoms may be similar to those of type 1 diabetes. A youth may feel very tired, thirsty, or nauseated and have to urinate often. Other symptoms may include weight loss, blurred vision, frequent infections, and slow healing of wounds or sores. Some youth may present with vaginal yeast infections or burning on urination due to yeast infection. Some may have extreme elevation of the blood glucose level associated with severe dehydration and coma.

The cornerstone of diabetes management for children with type 2 diabetes is healthy eating with portion control, and increased physical activity.

There is no single approach to manage diabetes that fits all children. Blood glucose targets, frequency of blood glucose testing, type, dose and frequency of insulin, use of insulin injections with a syringe, or a pen or pump, use of oral glucose-lowering medication and details of nutrition management all may vary among individuals. The family and diabetes care team determine the regimen that best suits each child's individual characteristics and circumstances.

Excerpted from the National Diabetes Education Program, a program of the National Institutes of Health and the Centers for Disease Control and Prevention (2014). Overview of diabetes in children and adolescents (p.1-3).

DEFINITIONS

(a) *Diabetes Medical Management Plan (DMMP)* is a medical order written by the student's physician or healthcare provider outlining how health care related to diabetes will be provided to the student in the school environment (NDEP, 2010).

(b) *Diabetes* is a serious chronic disease in which blood glucose (sugar) levels are above normal due to defects in insulin production, insulin action, or both (NDEP, 2010, p.1).

(C) *Individualized Health Plan (IHP)* is a plan written by the school nurse based on the

DMMP filled out by the student's physician that is distributed to the school personnel who are responsible for the care of the diabetic student during school hours. It includes the following: (a) when and how often student's blood sugar will be checked, (b) guideline for administering insulin, (c) meals and snacks in relationship to students blood glucose and symptoms, (d) signs and symptoms of low and high blood sugar as well as the treatment (e) ketone testing and guideline with necessary actions, and (f) the parents emergency contacts etcetera (ADA, 2003).

(d) *Emergency Care Plan for Hypoglycemia and Hyperglycemia* is the plan of care developed by the school nurse with the help of the parent or guardian, based on the DMMP, which summarizes how to recognize and treat hypo and hyperglycemia, and who to notify in case of emergency. This is distributed by the school nurse to all the school staff that is responsible for the care of the diabetic student (NDEP, 2010).

(e) *School Healthcare Team* is a team that includes the diabetic student, the parents/guardian, student's teacher, administrators, school nurse, and other healthcare staff, counselors, school psychologist, coach and other designated staff members (NDEP, 2010).

(f) *Student's Healthcare Team* is a team of individuals that includes the diabetic student, the parents/guardian, the student's physician or healthcare provider, diabetic educator, nurse, registered dietitian, and other health care practitioners outside of the school involved in providing health need of the student (NDEP, 2010).

(g) *Guideline* is a set of recommendations that are established after critically appraising applicable literatures of research findings (ADA, 2015).

(h) *Trained Diabetes Personnel* are nonmedical school staffs that are trained to safely perform or supervise diabetes task in the school environment (NDEP, 2010).

TEAM RESPONSIBILITIES

Parents/Guardian: The parents/guardian is responsible for providing the school with all required materials, equipment, and necessary medications or insulin, which includes but not limited to glucometer, glucose tablets or carbohydrate source, ketone strips, the DMMP filled out by students medical provider etc. The DMMP should be filled out annually or as needed by the student's personal diabetes health care team. The district sample Diabetes Medical Management Plan (DMMP) should be used if the clinic or the doctor does not have a standard form as long as all the necessary information needed for diabetes care in the school is included. In addition, the parents are responsible for notifying the school nurse of any changes in the medical treatment and updates; the maintenance of the equipment and replacement of necessary supplies as needed (ADA, 2003).

School Nurse: The school nurse is responsible for coordinating between the student's healthcare team, parents and the school by doing the following:

- Obtain the DMMP and supplies from parents at the beginning of the each school year.
- Develop the Emergency Care Plan (ECP) based on the DMMP, review with parents/guardians and obtain their signature.
- Distribute the ECP to appropriate staff that have direct supervision of the student.
- Train school personnel in diabetes management and care as outlined in the Diabetes Management Training for School Personnel.
- Ensure that all necessary documentation forms are in place.
- Develop, initiate and or contribute to the development of health and educational plans such as IHP, 504 plans and the IEP if indicated.

School Administrator: The school administrator is responsible for ensuring that designated trained diabetic personnel is available at all time to carry out diabetic related tasks as trained especially on treatment of diabetes emergencies (ADA, 2003). In addition, the administrator or administrative designee shall notify the school nurse of field trips and other extracurricular activities.

Student: The student should be allowed to provide diabetic self-care at school to the degree of the student's abilities, development and experience based on the physicians order and or as agreed upon by the student's healthcare team, school nurse and the parents (ADA, 2003).

TRAINING

School personnel will receive training based on their degree of involvement with the diabetic student, as recommended in *Helping the Student with Diabetes Succeed: A guide for School Personnel* (NDEP, 2010).

Level 1	General overview of diabetes and emergency measures
WHO:	All personnel who have contact with the student
WHAT:	General diabetes overview How to recognize and respond to symptoms of low and high blood glucose Who to contact for help in an emergency
Level 2	Diabetes basics and what to do in an emergency situation
WHO:	Classroom teachers and all school staff who have direct care for the student
WHAT:	Level 1 instruction Emergency Care Plan instruction Measures in case of a diabetes emergency. Guidelines for field trips and extra-curricular activities
Level 3	Specific student's diabetic care needs
WHO:	Trained diabetes staff assigned for care
WHAT:	Level 1 and 2 instruction Instruction on student's physicians order (DMMP) Completes Diabetes Management Training

Adapted from Helping the Student with Diabetes Succeed: A guide for School Personnel (NDEP, 2010).

LEGAL REQUIREMENT

Section 504 of the Rehabilitation Act of 1973; the Individual with Disabilities Education Act, formerly known as the Education for All Handicapped Children Act of 1975, and the Americans with Disabilities Act are federal laws in place to protect children with diabetes (ADA, 2003). "Under these laws, diabetes has been considered to be a disability, and it is illegal for schools and/or day care centers to discriminate against children with disabilities. In addition, any school that receives federal funding or any facility considered open to the public must reasonably accommodate the special needs of children with diabetes" (ADA, 2003, p.91.). "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)" (ADA, 2003, p. 91), with as minimal disruption to the school activities as possible (ADA, 2003).
Other laws that can impact the care of students with diabetes in the school settings are the Family Educational Rights and Privacy Act (FERPA) and the Individuals with Disabilities Education Act (IDEA). These laws help to shield the student's confidentiality. The FERPA and IDEA forbid schools from revealing student's personal identifiable data with certain exclusions in student's educational record without prior parents or guardian written consent or from a post-secondary school student that is eighteen years of age or older (NDEP, 2010).

Education Codes:
49414.5
49414.7
49452.7
49423

References

American Diabetes Association. (2003). Care of children with diabetes in the school and day care setting. Diabetes Care, 26, s131-s135. Retrieved from http://care.diabetesjournals.org/content/26/suppl_1/s131.full

American Diabetes Association. (2015a). Standards of medical care in diabetes-2015. Retrieved from http://professional.diabetes.org/resourcesforprofessionals.aspx?cid=84160

American Diabetes Association. (2015b). Statistics about diabetes. Retrieved from http://www.diabetes.org/diabetes-basics/statistics/?loc=db-slabnav

Centers for Disease Control and Prevention. (2014a). Basics about diabetes. Retrieved from http://www.cdc.gov/diabetes/basics/diabetes.html

Centers for Disease Control and Prevention. (2014b). Estimates of diabetes and its burden in the United States. Retrieved from http://www.cdc.gov/diabetes/pdfs/data/2014-report-estimates-of-diabetes-and-its-burden-in-the-united-states.pdf

Dabelea, D., Mayer-Davis, J., Saydah, S., Imperatore, G., Linder, B., Divers, J.,…Hamman, R. F. (2014). Prevalence of type 1 and type 2 diabetes among children and adolescents from 2001 to 2009. Journal of the American Medical Association (JAMA), 311(17), 1778-1786. doi:10.1001/jama.2014.3201

National Diabetes Education Program (2010). Helping the student with diabetes succeed: A guide for school personnel. Retrieved from http://www.ndep.nih.gov/publications/PublicationDetail.aspx?PubID=97&redirect=true#main

National Diabetes Education Program (2014). Overview of diabetes in children and adolescents. Retrieved from http://www.niddk.nih.gov/health-information/health-communication-programs/ndep/living-with-diabetes/youth-teens/diabetes-children-adolescents/Documents/Overview-of-Diabetes-Children-508_2014.pdf

Silverstein, J., Klingensmith, G., Copeland, K., Plotnick, L., Kaufman, F., Lafeel, L., ... Clark, N. (2005). Care of children and adolescents with type 1 diabetes. Diabetic Care, 28(1), 186-212. doi:10.2337/diacare.28.1.186

List of Diabetes Resources

American Academy of Pediatrics (AAP)
141 Northwest Point Blvd
Elk Grove Village, IL 60007
800-433-9016
http://www.aap.org

American Association of Clinical Endocrinologists (AACE)
245 Riverside Ave, Suite 200
Jacksonville, FL 32202
904-353-7878
http://www.aace.com

American Association of Diabetes Educators (AADE)
200 West Madison Street, Suite 800
Chicago, Illinois 60606
800-338-3633
http://www.diabeteseducator.org

American Diabetes Association (ADA)
1701 North Beauregard Street
Alexandria, VA 22311
800-DIABETES (800-342-2383)
http://www.diabetes.org

American Dietetic Association (ADA)
120 South Riverside Plaza, Suite 2000
Chicago, IL 6060
800-877-1600
http://www.eatright.org

American Medical Association (AMA)
515 North State Street
Chicago, IL 60654
800-621-8335
http://www.ama-assn.org

California Education Code Section 49414
http://www.cde.ca.gov
California School Nurses Organization (CSNO)
1225 8th Street, Suite 500
Sacramento, CA 95814
http://www.csno.org
916-448-5752

Centers for Disease Control and Prevention (CDC)
1600 Clifton Road
Atlanta, GA 30333
800-CDC-INFO (800-232-4636)
888-232-6348 (TTY)
http://www.cdc.gov

Children with Diabetes
8216 Princeton-Glendale Road, PMB 200
West Chester, OH 45069
http://www.childrenwithdiabetes.com

Federal laws

Section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. 794, implementing regulations at 34 CFR Part 104. http://www2.ed.gov/policy/rights/reg/ocr/edlite-34cfr104.html

Title II of the Americans with Disabilities Act of 1990, as amended, 42 U.S.C. 12134 et seq., implementing regulations at 28 CFR Part 25. http://www2.ed.gov/policy/rights/reg/ocr/edlite-28cfr35.html

The Americans with Disabilities Act Amendments Act of 2008.
http://frwebgate.access.gpo.gov/cgibin/getdoc.cgi?dbname=110_cong_bills&docid=f:s3406enr.txt.pdf

Individuals with Disabilities Education Act, 20 U.S.C. 1400 et seq., implementing regulations at 34 CFR Part 300 http://www2.ed.gov/about/offices/list/osers/osep/index.html

Family Educational Rights and Privacy Act, 20 U.S.C.1232g, implementing regulations at 34 CFR Part 99. http://www2.ed.gov/policy/gen/guid/fpco/index.html

Juvenile Diabetes Research Foundation International (JDRF)
26 Broadway, 14th Floor
New York, NY 10004
800-223-1138
http://www.jdrf.org

Los Angeles County Office of Education (LACOE)
9300 Imperial Highway
Downey, CA 90242
562-922-6111
http://www.lacoe.edu

National Association of Chronic Disease Directors Diabetes Council
2872 Woodcock Blvd, Suite 220
Atlanta, GA 30341
770-458-7400
http://www.chronicdisease.org

National Association of School Nurses (NASN)
1100 Wayne Avenue Suite 925
Silver Spring, MD 20910
240-821-1130
https://www.nasn.org

National Diabetes Education Program (NDEP)
National Diabetes Education Program
1 Diabetes Way
Bethesda, MD 20892-3600
888-693-6337
http://www.yourdiabetesinfo.org or www.ndep.nih.gov

NDEP Resources on Diabetes in the School Setting
Helping the Student with Diabetes Succeed: A Guide for School Personnel
PowerPoint presentation about Helping the Student with Diabetes Succeed

National Diabetes Information Clearinghouse (NDIC)
1 Information Way
Bethesda, MD 20892-3560

800-860-8747
866-569-1162 (TTY)
http://diabetes.niddk.nih.gov/

Weight Control Information Network (WIN)
1 WIN Way
Bethesda, MD 20892-3665
877-946-4627
http://www.win.niddk.nih.gov

Pediatric Endocrinology Nursing Society (PENS)
7794 Grow Drive
Pensacola, FL 32514
877-936-7367
http://www.pens.org

The Endocrine Society
8401 Connecticut Avenue, Suite 900
Chevy Chase, MD 20815
888-363-6274
http://www.endo-society.org/

U.S. Department of Education (ED)
400 Maryland Avenue, SW
Washington, DC 20202

Office for Civil Rights (OCR)
800-421-3481
877-521-2172 (TTY)
http://www.ed.gov/about/offices/list/ocr/index.html
Office of Special Education Programs (OSEP)
202-245-7459
202-205-5637 (TTY)
http://www.ed.gov/about/offices/list/osers/osep/index.html?src=mr

Sample Diabetes Medical Management Plan

School Year_____

DIABETES MEDICAL MANAGEMENT PLAN (DMMP)

Student's Name: DOB: ID# Grade:	
Physician's Orders	
Blood glucose monitoring at school performed by Student: ☐ Independently ☐Supervised ☐ Total Care Insulin administered at school by student: ☐Independently ☐Supervised ☐ Total Care	Diet: _____ Carbohydrate counting: ☐Independent ☐Supervised ☐ Total ☐Other needs: _____

Blood Glucose Monitoring

Target range of blood glucose 70 - 150 other: range_____

Check glucose with meter provided from home

If independent with care, student may carry meter.

If supervised or total care, check blood glucose before lunch and if student exhibits signs/symptoms of high or low blood glucose. Additional glucose checks at:

☐ before snacks ☐ before lunch ☐ before exercise ☐ before getting on bus ☐ after exercise

☐ other: _____

Treatment of hypoglycemia (low blood sugar)

1. Treatment is given for low blood sugar less than 70mg/dl or_____mg/dl
2. Treat with one of the following:

☐4 oz juice ☐ 3 glucose tabs

☐15 grams glucose gel ☐ other_____

☐Recheck BG in 15 minutes and repeat above until BG>70

3. If lunch or snack is more than one hour away give one of the following 10 minutes after the juice:

☐ 15 grams CHO choice per parent/student ☐ 7-8 gm. CHO choice per parent/student

4. **Severe low blood glucose event**, unconscious, seizure, unable to swallow

Inject Glucagon subcutaneously in the arm or thigh.

☐ 0.5mg =1/2cc (students under 10 yrs. of age)

☐ 1mg = 1cc (students 10 yrs. or older)

☐_____

☐ **Call 911** ☐ Notify parent/guardian

Treatment of Hyperglycemia (high blood sugar)

Insulin Orders ☐Humalog ☐Novolog ☐Apidra ☐ No insulin at school at this time

☐Insulin delivered by injection ☐syringe and vial ☐pen ☐pump

Have child wash and dry hands thoroughly and repeat blood sugar test if blood sugar is greater than 300 mg/dl.

1. Call doctor or parent if blood sugar is greater than_____mg/dl
2. Check urine ketones if blood sugar is greater than _____ mg/dl. Do not allow student to exercise if ketones are present. Encourage water. Notify MD if ketones are moderate to large.
3. **Insulin for Correction may be given at:**

☐ before AM snack ☐ before lunch ☐other:_____

Do not give correction insulin more frequently than every ____ hours or within 2 hours of receiving insulin for food coverage.

Blood Glucose Value/Units of Insulin for Correction:

_____ units if blood glucose from _____ to _____

_____ units if blood glucose from _____ to _____

_____ units if blood glucose from _____ to _____

_____ units if blood glucose from _____ to _____

_____ units if blood glucose from _____ to _____
_____ units if blood glucose from _____ to _____
_____ units if blood glucose from _____ to _____
_____ units if blood glucose from _____ to _____
Or
☐Use the following correction formula: ___ units for every ____ over _____mg/dl. (Blood glucose level - [minus] ____) ÷_____= units to inject
Or
☐By insulin pump set for sensitivity/correction factor: _____

Meal and Snack Insulin Coverage

Student will need to take insulin at lunch and every time carbohydrates are eaten.

☐Insulin to carbohydrate ratio: _____ units per _____grams CHO

☐Insulin delivery pump-with every carbohydrate intake (snack and lunch)
Avoid juices, sodas and any other sugar-sweetened drinks.

Insulin therapy in case of a disaster: Check blood sugar every_____ hours and give insulin as ordered.

Exercise and Sports

1. The student may participate in sports: ☐Yes ☐ No
2. Activity restrictions: ☐Yes ☐ No
3. Student should not exercise if urine ketones are present or if blood glucose is less than ____ mg/dl.
4. ☐Carbohydrate food/beverage must be available before, during and after exercise to treat and prevent low blood sugar.
5. ☐Eat 15 grams of carbohydrate before vigorous activity/exercise.

Field trips and after school activities

☐ Arrange for appropriate monitoring and access to supplies.

Physician Signature: _____Date:_____

I give permission to the school nurse, and trained designated staff members to perform and carry out the diabetes tasks outlined in this form. I authorize the school nurse to communicate with the Physician regarding my child's condition and authorize the release of information to school personnel with direct contact or supervision of my child. I will:

1. Provide the necessary supplies and equipment (glucometer, glucose tablets, ketone strips, insulin etc.)
2. Notify the school nurse/personnel of any change in my child's health status or physician.
3. Notify the school nurse/personnel of any change in the physician's orders and provide new orders or DMMP to the school.

Parent/ Guardian Signature: _____Date:_____

Diabetic Medical Management Plan (DMMP) reviewed by

School Nurse_____Date:_____

Sample Diabetes Management Training Documentation Form

Diabetes Management Training Information for Trained School Personnel

Level 1: ☐ Diabetes overview

` ☐ Signs and symptoms of high and low blood sugar ☐ How to treat

☐ Who to contact for help in an emergency

Level 2 & 3:

Student:	DOB:	ID #:	Sch:	Yr:

Blood Glucose Testing (BGT) ☐ testing equipment located at the health office ☐ carried by student

Hypoglycemia (Low Blood Glucose)

☐ **Trained to recognize signs and symptoms of low blood sugar**

Treatment

If blood sugar is less than _____ mg/dl, treat according to physician's order (see DMMP).

☐ Fast acting carbohydrate carried by student ☐ Located at the health's office

☐ Other_____

Student's usual symptoms of low blood sugar are _____

Hyperglycemia (High Blood Glucose) Treatment

☐ **Trained to recognize signs and symptoms of high blood sugar**

For blood glucose greater than _____ mg/dl, follow physician order (see DMMP) and

☐ Notify parent ☐ Notify school nurse ☐ Notify physician ☐ School Administration

Insulin Administration ***(Can only be given by a licensed health care provider or parent/parent designee)***

☐ Independent ☐ Supervised ☐Dependent ☐ Assist

Student uses ☐ Insulin Pen ☐ Insulin Pump ☐ Vial with syringe

Diet ☐ Student participates in school lunch and or snacks ☐ Meals and snacks provided by parents

Carbohydrate Counting ☐ Independent ☐ Supervised ☐ Dependent ☐ Assist

Ketone testing for blood glucose greater than _____

Glucagon ☐ Student carries glucagon ☐ Located at the health office ☐ other_____

Physical Activities/Sports ☐ No restriction ☐ Restriction_____

Documentation: Blood glucose results and treatment should documented in the diabetic log sheet

When to Call the Nurse: If BG level does not increase to at least 70mg/dl after 2 treatments for low BG or if BG is over 300mg/dl.

☐**Trained on Emergency Care Plan (Please attach)**

By signing below, I indicate that I have received basic diabetes overview and additional training based on the levels as outlined in this form.

Trained Staff Name:	Title	Signature	BGT	Carbohydrate Counting	Glucagon
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐

School Nurse: _____ Date: _____

Sample Diabetes Emergency Care Plan

DIABETES MELLITUS EMERGENCY CARE PLAN

Expires at the end of the current school year _____

Student:	DOB:	ID #:	Sch:	Yr:

EMERGENCY PHONE NUMBERS

Parent /Guardian's Address:		City:	State: CA Zip:
Mother:	Home Phone:	Cell:	Work:
Father:	Home Phone:	Cell:	Work:
Doctor:	Office:	Cell:	Fax:

MEDICATIONS

☐Humalog ☐Novolog ☐ Apidra ☐Other_____
Injection ☐Syringe and vial ☐Pen ☐Pump

EMERGENCY ACTIONS TO TAKE

If you see,	*Then do this*
Student is unconscious, lethargic, having seizures or has difficulty breathing	Call 911!
Student is showing signs or symptoms of <u>low blood sugar:</u> Student must be escorted to the Health Office. Causes: ▪ Too little food ▪ Too much insulin ▪ Extra exercise w/o snack Onset Is sudden Signs of symptoms of: ▪ Blood sugar less than 70mg/dl ▪ Nervousness/anxiety ▪ Fast heart beat/sweating ▪ Hunger/stomachache ▪ Dizziness/Mental confusion ▪ Headache/irritability ▪ Drowsiness ▪ Weakness/fatigue ▪ Slurred speech ▪ Unconsciousness	1. If the student is conscious and blood sugar is less than ____ mg/dl, immediately treat him/her with: ☐ Juice (_____oz) OR ☐Regular soda (____oz) OR ☐Glucose tablets (____) OR ☐Glucose gel (____gm) OR ☐Other: _____ 2. Never leave the student unattended by an adult. • Observe for decreased alertness or increase in severity of symptoms. 3. Student or trained personnel to assess the blood sugar. 4. If symptoms persist after 15 minutes, recheck the blood sugar and retreat as above. 5. When symptoms resolve, perform one of the following: • Meal or snack is imminent (approximately 30 minutes away), child may return to class. • Meal or snack is not imminent, but exercise will occur before the next meal, child should eat:_____ 6. Recheck the blood sugar after the second treatment and before the student returns to normal school activities. <u>Do not return to class unless the parent has been notified</u>. 7. Document on the DM monitoring record and inform the school nurse.

Student:	DOB:	ID #:	Sch:	Yr:

Student is showing signs or symptoms of <u>high blood sugar:</u>

Causes:

- Too much food
- Too little insulin
- Stress or illness

Onset Is Gradual

Signs of symptoms of:

- Blood sugar greater than 200mg/dl
- Extreme thirst
- Frequent urination
- Dry skin
- Hunger
- Blurred vision
- Drowsiness
- Nausea/Vomiting
- Other:

8. Student or trained personnel to check the blood sugar.
9. <u>Never leave the student unattended by an adult.</u>
    - Observe for decreased alertness or increase in severity of symptoms.
10. Initiate care as checked below:

☐ Notify parent and or call DM hotline when blood test result is _____ mg/dl

☐ Give 1-2 glasses of water every hour.

☐ Mild exercise

11. If student is asymptomatic and parent has approved, resume classroom activities.
12. If student develops nausea/vomiting and/or rapid breathing, call 911, parent and school nurse immediately.
13. Document on the Health Log and notify the school nurse.

I approve the above procedure in accordance with the instructions provided by my physician. I authorize the school nurse to communicate with the physician regarding my child's condition and authorize the release of information to school personnel with direct contact or supervision of my child.

Parent/Guardian: _____ Date: _____

School Nurse:_____ Date: _____

Sample Diabetes Monitoring Record

Diabetes Monitoring Record

Student: _____ DOB: _____ ID #: _____

Date	**Time**	**Urine Ketones (Neg, S, M, L)**	**Blood Glucose Level (mg/dl)**	**Carbohydrate Intake (gm CHO)**	**Insulin**				Comments	Initials
					Insulin Per Sliding Scale **(Correction)**	Insulin for Carb. Intake	Total Insulin Given (Units)	Insulin Admin. by		

Signature of Staff Providing Care	**Initials**

Signature of Staff Providing Care	**Initials**

Sample Plan for Diabetic Care During School Lock Down

Diabetic Care during a School Lock-Down *(Blood Glucose Meter Is Not Accessible)*

School Year: _____

Student: _____ DOB: _____ ID #: _____

As soon as the lockdown occurs and occasionally thereafter, ask the student if he/she is experiencing symptoms of low or high blood glucose. See below for emergency actions to take:

Emergency Actions to Take:

Symptoms of Low Blood Glucose	**Symptoms of High Blood Glucose**
Shaking Sweating Dizziness Anxious Hunger Weakness Irritable Stomachache	Extreme thirst Frequent urination Drowsiness Hunger Blurred vision
Treatment for low blood glucose (no meter available) • Give **one** of the following: 4 oz of juice or 4 oz of soda or 3-4 glucose tablets • If symptoms persist after 15 minutes, give **one** of the following again: 4 oz of juice or 4 oz of soda or 3-4 glucose tablets • **If lunch or snack is more than an hour away,** give _____ gm of carbohydrates. • **Immediately call the principal/health office so support can be provided.** • When lockdown is over, send him/her to the health office with an adult. • *If student appears confused, becomes unconscious, is unable to safely swallow or has a seizure, inform the principal, main office and school nurse so that 911 is called.*	**Treatment for high blood glucose (no meter available)** • Drink 1-2 glasses of water • Do not eat/drink carbohydrates (e.g candy, juice, cookies, granola bar) • **Immediately call the principal/health office so support can be provided.** • When the lockdown is over, send him/her to the health office with an adult. • *If student appears confused, has difficulty breathing, nausea/vomiting or has a fruity odor on breathe, inform the principal, the main office and the school nurse so that 911is called.*

Phone Numbers		
Main Office:	Principal:	Assistant Principal:
Health Office:	Nurse:	

Sample 504 Plan

Areas of Educational Impact	Date: Related Accommodation(s) (Student's Name) ID #	Person(s) Responsible	Frequency (when action will be taken)
Academic Testing/ Instructional Day	The student will need to be released 10 minutes before lunch and before eating classroom snacks to test BG in the Health Office and receive insulin coverage as ordered, or perform independently if he/she carries own equipment. Each substitute teacher will receive written instruction regarding the student's diabetic care. The student will be permitted to leave the classroom to check blood glucose if she/he feels symptoms of low blood glucose, and have free use of the bathroom without academic penalty.		
Blood Glucose Monitoring And Treatment of High (hyperglycemia) or low (hypoglycemia) Blood Glucose	BG monitoring will be done in accordance with the level of self-care and the designated times listed in the doctor's orders. If she/he should need assistance and the school nurse is not available, trained personnel will monitor the student's BG level and follow the physician's orders within their scope of practice. Insulin will be administered at lunch time only according to doctor's orders The location of the insulin and BG meter is in the Health Office or on student. When any staff member believes the student is showing signs of high or low blood sugar, the student should immediately have his BG checked in the Health Office; he/she should not be left alone or sent unescorted. High or low BG should be treated as set out in the doctor's orders. Any staff member who finds the student unconscious will immediately contact the school office and do the following: Call 911 Contact the school nurse or trained personnel to administer Glucagon. Contact the parent(s)/guardian(s).		
Snacks and meals	The school nurse will work with the student and his/her parents/guardians to coordinate a meal and snack schedule in accordance with the doctor's orders that will coincide with the schedule of classmates to the closest extent possible. The student shall eat lunch at the same time each day or earlier if hypoglycemic. The student shall have enough time to finish lunch. The parents/guardians will provide/supply the		

	school with snacks and quick-acting glucose (e.g. juice/glucose tablets) to treat hypoglycemia.		
Field trips and extracurricular activities	The student will be permitted to participate in all field trips and extracurricular activities; supervision for BG management to be determined by the physician's orders. Supervision will be performed by identified school personnel/parents/guardians; the student's parents/guardians may attend the field trip and are not required to accompany the student. The school nurse shall be notified of all field trips. Depending on the type of activity during the trip, specific orders may need to be obtained. (e.g. may need to check his BG before leaving or returning back to school. A teacher will need to be instructed on emergency measures to take in case the student does not feel well) When the parent/guardian cannot attend field trips going beyond the school day and there is no staff member to assist the student, the teacher shall give the school nurse at least one month notice for all field trips necessitating a licensed nurse to manage the student's BG while on the field trip.		
Exercise and physical activity	The student should participate fully in physical education classes and team sports as per doctor's orders. Physical education instructors must be able to recognize and assist with the treatment of hypoglycemia.		
Equal Treatment and Encouragement	Encouragement is essential. The student must not be treated in a way that discourages the student from eating snacks on time or from progressing in doing his/her own glucose checks and general diabetes management. If the student desires, the student shall be provided with privacy for blood glucose monitoring and insulin administration. The school staff will keep the student's diabetes confidential, except to the extent that the student decides to openly communicate about it with others.		
Following School Rules	When the student's BG is too low or too high, the student may act out in an aggressive manner. The student will not receive a discipline consequence as a result of this behavior, which is a caused by the diabetes.		
Emergency Evacuation	In the event of an emergency, the student's 504 will remain in full effect. The school nurse will provide diabetes care as outlined in the plan and as per physician's orders. The parent/guardian is responsible to supply the school with all necessary medication and supplies in advance or the emergency.		

Sample Individualized Health Plan

Sample Template

Individualized Health Care Plan (IHP)

Student: _____

Grade: _____

Dates: _____

School Year: _____

IHP Completed by and Date: _____

IHP Review Dates: _____

Nursing Assessment Review: _____

Nursing Assessment Completed by and Date: _____

Nursing Diagnosis	Sample Interventions and Activities	Date Implemented	Sample Outcome Indicator	Date Evaluated
Managing Potential Diabetes Emergencies (risk for unstable blood glucose)	Establish and document student's routine for maintaining blood glucose within goal range including while at school: **Blood Glucose Monitoring** • Where to check blood glucose: ☐ Classroom ☐ Health room ☐ Other • When to check blood glucose: ☐ Before breakfast ☐ Mid-morning ☐ Before lunch ☐ After lunch ☐ Before snack ☐ Before PE ☐ After PE ☐ 2 hours after correction dose ☐ Before dismissal ☐ As needed ☐ Other: _____ • Student Self-Care Skills: ☐ Independent ☐ Supervision ☐ Full assistance • Brand/model of BG meter: _____ • Brand/model of CGM: _____		**Blood glucose remains in goal range** Percentage of Time 0% 25% 50% 75% 100% 1 2 3 4 5	

Tools

Sample Template

Individualized Health Care Plan (IHP) (Continued)

Nursing Diagnosis	Sample Interventions and Activities	Date Implemented	Sample Outcome Indicator	Date Evaluated
Supporting the Independent Student (effective therapeutic regimen management)	**Hypoglycemia Management** **STUDENT WILL:** • Check blood glucose when hypoglycemia suspected • Treat hypoglycemia (follow Diabetes Emergency Care Plan) • Take action following a hypoglycemia episode: _____ • Keep quick-acting glucose product to treat on the spot Type: _____ Location: _____ • Routinely monitor hypoglycemia trends r/t class schedule (e.g., time of PE, scheduled lunch, recess) and insulin dosing • Report and consult with parents/guardian, school nurse, HCP, and school personnel as appropriate		**Monitors Blood Glucose** (records, reports, and correctly responds to results) Never Demonstrated — Consistently Demonstrated 1 2 3 4 5	
Supporting Positive Coping Skills (readiness for enhanced coping)	**Environmental Management** • Ensure confidentiality • Discuss with parents/guardian and student preference about who should know student's coping status at school • Collaborate with parents/guardian and school personnel to meet student's coping needs • Collaborate with school personnel to create an accepting and understanding environment		**Readiness to Learn** Severely Compromised — Not Compromised 1 2 3 4 5	

(Adopted from Helping Student with Diabetes Succeed-A Guide for School Personnel, NDEP, 2010).

Appendix D: Letter of Invitation to Participate

Invitation to participate in a study project titled:
"Developing a Guideline for Care of Students with Diabetes in the School District"

Dear Credential School District Nurses,

I am conducting a survey study as part of my doctorate in nursing practice capstone project on developing a guideline for care of students with diabetes in the school district. As the health experts in the school settings, you are in an ideal position to give me a valuable feedback from your own prospective.

The survey will be in two phases and will take approximately two hours in a two week period. The first phase will take approximately 30 minutes to complete. I am trying to capture your perspective on the developed guideline by obtaining feedback which will be used to make revisions if needed and improve on the initial developed guideline.

The second phase will take approximately an hour to complete. Under this stage, I am trying to have you evaluate the usability, procedural thoroughness and the quality of the developed practice guideline.

There is no compensation for participating in this study. However, your participation will be a valuable addition to the study and findings could improve the district nurses' ability to adequately manage students with diabetes and enable the school district to provide a safe environment for diabetic students to learn.

This letter will serve as an invitation letter as well as an information letter. In addition, an implied consent will be sent to you individually via district mail. You do not need to contact me with your intent to participate. An acceptance to participate will be determined by the completion and return of the surveys.

The packages will be dropped off at your respective school sites. The package will have the copy of the initial developed guideline, a formative guideline questionnaire, the AGREE II Instrument, and the overview of the DNP project along with envelopes you will use to return the completed forms in the event that you choose to participate. If you are willing to participate, do not return the consent form, keep it for your record, and please complete and return the surveys sealed in the envelop that will be provided to you, dropped off in the secured box that will be placed in the nurses' office at the school district.

Thanks!

Rita Onwenna

Appendix E: Permission to Use the AGREE II Instrument

From: Agree, Z <agree@mcmaster.ca>
Date: Wednesday, April 13, 2016
Subject: Re: New contact us received from the AGREE Enterprise website
To: "rita.onwenna@waldenu.edu" <rita.onwenna@waldenu.edu>

Hi Rita,

Thank you for contacting the AGREE Scientific Office. As you have already stated, you do not require any formal permission from us to use the AGREE II in your project. We do require you to properly reference the tool if it has been used, please see below for the citation.

Brouwers M, Kho ME, Browman GP, Burgers JS, Cluzeau F, Feder G, Fervers B, Graham ID, Grimshaw J, Hanna S, Littlejohns P, Makarski J, Zitzelsberger L for the AGREE Next Steps Consortium. AGREE II: Advancing guideline development, reporting and evaluation in healthcare. Can Med Assoc J. 2010. Dec 2010; 182:E839-842; doi:10.1503/090449

Feel free to contact me if you require anything else.

Kind regards,

Kate Kerkvliet

Research Assistant
AGREE Scientific Research Office
Department of Oncology, Faculty of Health Sciences
McMaster University, Juravinski Site
Hamilton, ON, L8V 1C3
Website: www.agreetrust.org
Twitter feed: @AGREEScientific

From: Kate Kerkvliet <agree@mcmaster.ca>
Reply-To: Kate Kerkvliet <agree@mcmaster.ca>
Date: Tuesday, April 12, 2016 at 4:17 PM
To: Kate Kerkvliet <agree@mcmaster.ca>
Subject: New contact us received from the AGREE Enterprise website

Name	Rita Onwenna-Aninyei
Email	rita.onwenna@waldenu.edu
Your message	I am a doctorate of nursing practice student at Walden University and I am doing my project on "Developing a Guideline for Care of Students with Diabetes in the School District. I am writing to obtain permission to use The GRREE II Instrument to appraise the guideline that I will be developing. Although it is indicated in your website that the AGREE II Instrument may be reproduced and used for educational purposes, but I am required by my institution to obtain permission regardless. Thanks for your cooperation. Rita Onwenna-Aninyei

Appendix F: Letter of Cooperation from a Research Partner

MONTEBELLO UNIFIED SCHOOL DISTRICT
DIVISION OF PUPIL AND COMMUNITY SERVICES
123 South Montebello Boulevard / Montebello, California 90640-4729
Phone (323) 887-7900 / Fax (323) 887-5895

Letter of Cooperation from a Research Partner

May 2016

Montebello Unified School District
Daniel M. Garcia, Director
123 S. Montebello Blvd.
Montebello, CA 90640
323 887-7900, ext. 2267

Rita Onwenna, Nurse
123 S. Montebello Blvd.
Montebello, CA 90640

Dear Ms. Onwenna,

Based on my review of your research proposal, I give permission for you to conduct the study entitled "Developing a Guideline for Care of Students with Diabetes in the School District" within the Montebello Unified School District. As part of this study, I authorize you to conduct surveys for your study using the Formative Guideline Questionnaire and the AGREE II Instrument to collect data from the district nurses, use the nurses' office at the district as your surveys drop off location, email research invitations, consent forms, developed guideline, or any other necessary forms and to have meetings in the nurses office to disseminate your result if needed. Individuals' participation will be voluntary and at their own discretion.

We understand that our organization's responsibilities include: Allowing you to recruit the district nurses to participate in the study, use of the nurses' office at the district and the use of emails. No district personnel will be responsible for supervising your study activities and we reserve the right to withdraw from the study at any time if our circumstances change.

I confirm that I am authorized to approve research in this setting and that this plan complies with the organization's policies.

I understand that the data collected will remain entirely confidential and may not be provided to anyone outside of the student's supervising faculty/staff without permission from the Walden University IRB.

Sincerely,

Daniel M. Garcia, Director
Pupil and Community Services

Appendix G: AGREE II DATA

Table 3:
AGREE II DATA
Domain 1: Scope and Purpose

Domain 1	Item1	Item2	Item3	Total	% Score
Appraiser1	7	7	7	21	100%
Appraiser2	7	7	7	21	100%
Appraiser3	7	7	7	21	100%
Appraiser4	7	7	7	21	100%
Appraiser5	7	7	7	21	100%
Appraiser6	7	7	7	21	100%
Appraiser7	7	7	7	21	100%
Appraiser8	7	7	7	21	100%
Appraiser10	7	7	7	21	100%
Total Domain 1	63	63	63	63	100%

Maximum possible score = 7 (strongly agree) x 3 (items) x 9 (appraisers) = 189
Minimum possible score = 1 (strongly disagree) x 3 (items) x 9 (appraisers) = 27
The scaled domain score: (Obtained score – Minimum possible score)
(Maximum possible score – Minimum possible score)
189-27/189-27=1.0
Scaled Domain Score in %: 1.0 x 100 = 100%

Domain 2: Stakeholders Involvement

Domain 2	Item4	Item5	Item6	Total	% Score
Appraiser1	6	7	7	20	95.2%
Appraiser2	7	7	7	21	100%
Appraiser3	6	7	7	20	95.2%
Appraiser4	7	7	7	21	100%
Appraiser5	6	7	7	20	95.2%
Appraiser6	7	7	7	21	100%
Appraiser7	6	7	7	20	95.2%
Appraiser8	7	7	7	21	100%
Appraiser10	7	7	7	21	100%
Total Domain 2	59	63	63	185	97.5%

Maximum possible score = 7 (strongly agree) x 3 (items) x 9 (appraisers) = 189
Minimum possible score = 1 (strongly disagree) x 3 (items) x 9 (appraisers) = 27
The scaled domain score: (Obtained score – Minimum possible score)
(Maximum possible score – Minimum possible score)
185-27/189-27= .975
Scaled Domain Score in %: .975 x 100 = 97.5%

Domain 3: Rigor of Development

Domain 3	Item7	Item8	Item9	Item10	Item11	Item12	Item13	Item14	Total	% Score
Appraiser1	7	7	7	7	7	6	7	*N/A	41	97.6%

Appraiser2	7	7	7	7	7	7	7	*N/A	42	100%
Appraiser3	7	7	7	7	7	7	7	*N/A	42	100%
Appraiser4	7	7	7	7	7	7	7	*N/A	42	100%
Appraiser5	7	7	7	7	7	7	7	*N/A	42	100%
Appraiser6	7	7	7	7	7	7	7	*N/A	42	100%
Appraiser7	7	7	7	7	7	7	7	*N/A	42	100%
Appraiser8	7	7	7	7	7	7	7	*N/A	42	100%
Appraiser10	7	7	7	7	7	7	7	*N/A	42	100%
Total Domain 3	63	63	63	63	63	62	63	*N/A	377	99.70%

Maximum possible score = 7 (strongly agree) x 7 (items) x 9 (appraisers) = 378
Minimum possible score = 1 (strongly disagree) x 7 (items) x 9 (appraisers) = 63
The scaled domain score: (Obtained score – Minimum possible score)
(Maximum possible score – Minimum possible score)
377-63/378-63= .997
Scaled Domain Score in %: .997 x 100 = 99.7%
*Appropriate modification to the calculation of both maximum and minimum possible score are required when item/s are not included.

Domain 4: Clarity and Presentation

Domain 4	Item15	Item16	Item17	Total	% Score
Appraiser1	7	7	7	21	100%
Appraiser2	7	7	7	21	100%
Appraiser3	7	7	7	21	100%
Appraiser4	7	7	7	21	100%
Appraiser5	7	7	7	21	100%
Appraiser6	7	7	7	21	100%
Appraiser7	7	7	7	21	100%
Appraiser8	7	7	7	21	100%
Appraiser10	7	7	7	21	100%
Total Domain 4	63	63	63	189	100%

Maximum possible score = 7 (strongly agree) x 3 (items) x 9 (appraisers) = 189
Minimum possible score = 1 (strongly disagree) x 3 (items) x 9 (appraisers) = 27
The scaled domain score: (Obtained score – Minimum possible score)
(Maximum possible score – Minimum possible score)
189-27/189-27= 1.00
Scaled Domain Score in %: 1.00 x 100 = 100%

Domain 5: Applicability

Domain 5	Item18	Item19	Item20	Item21	Total	% Score
Appraiser1	6	7	7	*N/A	20	95.2%
Appraiser2	7	7	7	*N/A	21	100%
Appraiser3	6	7	7	*N/A	20	95.2%

Appraiser4	7	7	7	*N/A	21	100%
Appraiser5	7	7	7	*N/A	21	100%
Appraiser6	6	7	7	*N/A	20	95.2%
Appraiser7	7	7	7	*N/A	21	100%
Appraiser8	7	7	7	*N/A	21	100%
Appraiser10	6	7	7	*N/A	20	95.2%
Total Domain 5	59	63	63	*N/A	185	97.5%

Maximum possible score = 7 (strongly agree) x 3 (items) x 9 (appraisers) = 189
Minimum possible score = 1 (strongly disagree) x 3 (items) x 9 (appraisers) = 27
The scaled domain score: (Obtained score – Minimum possible score)
(Maximum possible score – Minimum possible score)
185-27/189-27= .975
Scaled Domain Score in %: .975 x 100 = 97.5%
*Appropriate modification to the calculation of both maximum and minimum possible score are required when item/s are not included.

Domain 6: Editorial Independence

Domain 6	Item22	Item23	Total	% Score
Appraiser1	7	*N/A	7	100%
Appraiser2	7	*N/A	7	100%
Appraiser3	7	*N/A	7	100%
Appraiser4	7	*N/A	7	100%
Appraiser5	7	*N/A	7	100%
Appraiser6	7	*N/A	7	100%
Appraiser7	7	*N/A	7	100%
Appraiser8	7	*N/A	7	100%
Appraiser10	7	*N/A	7	100%
Total Domain 6	63	N/A	63	100%

Maximum possible score = 7 (strongly agree) x 1 (items) x 9 (appraisers) = 63
Minimum possible score = 1 (strongly disagree) x 1 (items) x 9 (appraisers) = 9
The scaled domain score: (Obtained score – Minimum possible score)
(Maximum possible score – Minimum possible score)
63-9/63-9= 1.00
Scaled Domain Score in %: 1.00 x 100 = 100%
*Appropriate modification to the calculation of both maximum and minimum possible score are required when item/s are not included.

Overall Guideline Assessment

1. Rate the overall quality of this guideline

	Score	Total	% Score
Appraiser1	7	7	100%
Appraiser2	7	7	100%
Appraiser3	7	7	100%
Appraiser4	7	7	100%
Appraiser5	7	7	100%

Appraiser6	7	7	100%
Appraiser7	7	7	100%
Appraiser8	6	6	86%
Appraiser10	7	7	100%
Total Score	62	62	98.1%

Maximum possible score = 7 (strongly agree) x 1 (items) x 9 (appraisers) = 63
Minimum possible score = 1 (strongly disagree) x 1 (items) x 9 (appraisers) = 9
The scaled domain score: (Obtained score – Minimum possible score)
(Maximum possible score – Minimum possible score)
62-9/63-9= .981
Overall Quality of Guideline in %: .981 x 100 = 98.1%

2. I would recommend this guideline for use

	Yes	Yes with modification	No
Appraiser1	Yes		
Appraiser2	Yes		
Appraiser3	Yes		
Appraiser4	Yes		
Appraiser5	Yes		
Appraiser6	Yes		
Appraiser7	Yes		
Appraiser8	Yes		
Appraiser10	Yes		
Number of Approval	100%		

All participants recommend the guideline with 100% approval without modification

Appendix H: Permission to Reproduce the Stevens Star Model

From: Onwenna, Rita [mailto:Onwenna_Rita@montebello.k12.ca.us]
Sent: Tuesday, September 22, 2015 10:18 AM
To: Center for Advancing Clinical Excellence
Subject: Permission to reproduce

To Whom it May Concern,

My name is Rita Onwenna, I a doctorate in nursing student at Walden University and currently working on my capstone project. I am developing a guideline for the care of diabetic students in the school environment. I am writing to ask for permission to reproduce the ACE Star Model as a conceptual model to guide my project. Please feel free to contact me if you have any concern or question.

Thanks in advance for your help.

Rita Onwenna

Dear Ms. Onwenna:

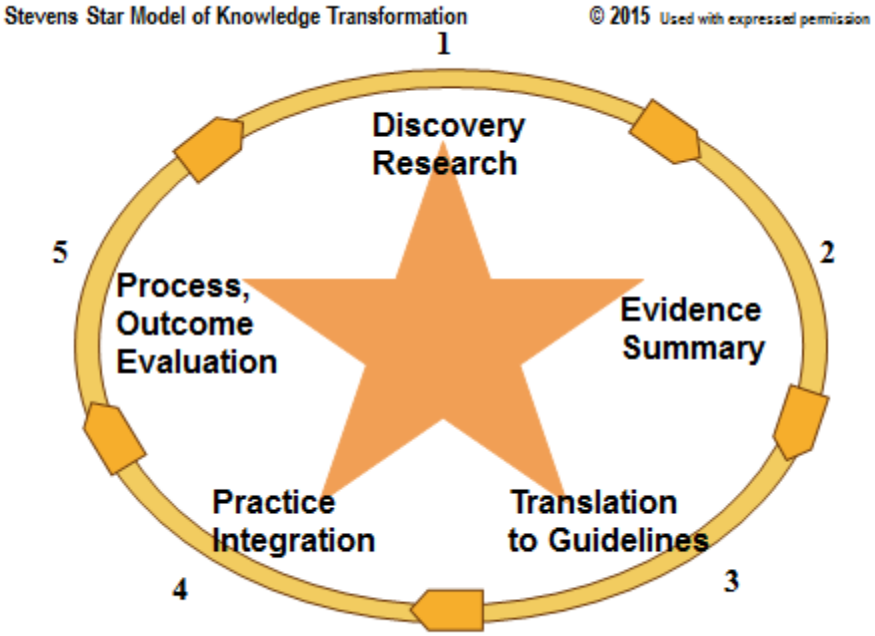
Thank you for your recent email regarding permission to use the ACE Star Model.

Please note that the model has been renamed to "Stevens Star Model of Knowledge Transformation". There is more information on each point of the Star…as depicted in this PPT.

Dr. Stevens is the copyright holder and grants you permission to include the model image and a paraphrased description of the model. The image must be accompanied with this phrase: "Copyrighted material (Stevens, 2015). Reproduced with expressed permission".

On another note, our Center is also involved with the Improvement Science Research Network (ISRN). The ISRN's work is to advance the emerging field of improvement science. Our mission is to advance the scientific foundation for quality improvement, safety and efficiency through transdisciplinary research addressing healthcare systems, patient centeredness, and integration of evidence into practice. It provides a laboratory to greatly enhance feasibility and generalizability of NIH (National Institutes of Health) proposals in improvement science. Additionally, it provides an infrastructure for a national program of research to test quality improvement interventions. The ISRN is comprised of national members, the Network Coordinating Center and a Steering Council. Research Priorities were adopted for the ISRN as the best thinking to date about the direction that should be taken in improvement science. Please visit our ISRN website at www.ISRN.net for further details.

Thank you for your interest in improving care and patient outcomes.
Joan Feller
Administrative Assistant Associate
Center for Advancing Clinical Excellence (ACE)
UT Health Science Center San Antonio
7703 Floyd Curl Drive, MC 7949
San Antonio, TX 78229-3900
Phone: (210) 567-1480


Stevens Star Model of Knowledge Transformation
© 2015 Used with expressed permission
1
Discovery
Research
2
Evidence
Summary
3
Translation
to Guidelines
4
Practice
Integration
5
Process,
Outcome
Evaluation

Appendix I: Scholarly Product for Dissemination

Developing a Guideline for Care of Students with Diabetes

Rita Onwenna-Aninyei, FNP, MSN, DNP-Student
Walden University

Objective: To develop an evidence-based guideline to create a standardized process for school nurses to coordinate and effectively manage diabetes in the school environment.

Background: The aim of this project was to develop an evidence-based guideline to be used by school nurses for the management of diabetes in the school. The project was focused on a school district located in the West Coastal region of the United States.

Method: A formative group was used to obtain feedback on the guideline with the use of a questionnaire The formative guideline questionnaires, after being reviewed and validated by diabetic experts, were distributed to a team of experts which consisted of 10 district nurses. Seven nurses had master's degrees and three had Bachelor of Science degrees, and all had many years of nursing experience. A total of 10 questionnaires were distributed, and nine responses were received within the allocated time. The summative group assessed the final guideline for quality and validity by the use of the AGREE II instrument.

Participants: A team of experts was assembled to critique the guideline. The team consisted of 10 nurses as participants. Seven of the nurses had master's degrees and three had Bachelor of Science degrees. All had several years of experience in different areas of nursing in addition to school nursing. Ten formative questionnaires were distributed to the team of experts who were also considered the end users. Nine nurses completed and returned the questionnaire within the allocated time. The same participants were also included in the summative group.

Result: The formative group feedback resulted in the revision of the guideline prior to distributing the guideline to the summative group. The guideline was recommended with 100% approval without modification. The guideline scored 98.1% in terms of quality.

Conclusion: The developed evidence-based guideline will create a standardized process for the school nurses to coordinate and effectively manage diabetes in the school environment.

Keywords: Evidence based-guidelines, guideline appraisal, diabetes mellitus, glycemic control, diabetic management, school, parents perception, teachers perception, interventions, academic achievement.

INTRODUCTION

Over the past four decades, the number of children with chronic conditions such as diabetes, asthma and epilepsy, has increased dramatically (Butler, Fekaris, Pontius, & Zacharski, 2012). These chronic conditions greatly impact learning. Diabetes Mellitus (DM) which is one of the most common conditions that affects children has been continuously increasing in incidence globally among all age groups, both sexes and all ethnic groups since 1990. However, the incidence is highest among minorities (Center for Disease and Prevention [CDC], 2012). According to Dabelea et al. (2014), DM affects children under the age of 20, and can lead to serious complications. Over the past two decades, there has been an increase in incidence for both types of DM in the United States (CDC, 2015). Type 1 DM has increased 21.1%, and type 2 DM has increased 30.5% (Dabelea et al., 2014).

BACKGROUND AND OBJECTIVES

The incidence of DM continues to rise globally and as one of the chronic conditions, it has enormous health and economic impact on both individuals and the nation as a whole (CDC, 2012). Diabetes is one of the most common chronic diseases that affect school-aged children under the age of 20 (Dabelea et al. 2014). According to American Diabetes Association (ADA) (2003), most of these children attend some form of school or daycare. To ensure that these children have a safe school environment, it is essential that the school and student health care teams coordinate care that is individualized to the specific needs of the student. For these students to be safe, achieve better long-term and best academic outcomes, it is essential that they are able to balance their meals, medications and activity levels (ADA, 2003). School personnel need to be knowledgeable of the plan of care and actions to take if needed. Parents need to provide the school with necessary information and supplies needed to adequately care for these children. In addition, parents have to work collaboratively with school personnel to ensure that the students have full participation in school activities and are safe in the school environment (ADA, 2003).

Unlike states such as New York, New Jersey, and Florida who have established general guideline for diabetes care in the school, the state of California does not have any established guidelines for diabetes care in the school. Local school districts are left to establish individual policy therefore creating diversity in policy and lack of standardization. Establishing guidelines will standardize the process that the district nurses can use to manage diabetes.

The objective of this article is to review and examine the guideline that has been created to standardize the process for the school nurse to coordinate and adequately manage diabetes in the school environment. It is essential to have collaboration and coordination among the parties involved in the care of the diabetic students. The school nurse who has the necessary skills and knowledge required in the school will be responsible for managing the care and helping the students in achieving adequate diabetic self-management (National Association of School Nurses [NASN, 2012). Achieving adequate diabetic-self management will assist these students to achieve academic success, adequate growth and development as well as prevent complication that could result from inadequate glycemic control (Kaufman, 2009).

GUIDELINE EVALUATION

PROJECT METHOD

Evidence-based guideline was developed to create a standardized process for the school nurses to coordinate and provide adequate diabetes management for students with diabetes in the school district. Based on the review of literature and guided by my experience as one of the district nurses, I established what needed to be included in the guideline. Careful analysis of data from the literature was used to support the strength and soundness of the guideline that was developed. To confirm that the necessary changes were made on the guideline to ensure accuracy and guarantee that the guideline was user friendly, I asked end users to review and critique the guideline before implementation.

METHOD: FORMATIVE GROUP

To obtain feedback on the guideline that was developed to create a standardized process for the district nurses to use for diabetic management in the school environment, a team of experts was assembled. This team included the nurses employed by this district who were also the end users. A letter of invitation was sent via the district email along with an implied consent form (IRB number 2016.06.0811:21:21-05’00’). Participants were given two days to ask questions or voice their concerns. After the review and validation of the questionnaire by a team of diabetic experts, the questionnaires and the AGREE II Instrument were precoded so that they could be matched up upon return. Precoded surveys were included in the package in addition to an overview of the DNP project. Participants were given three days to complete and return surveys to a designated area. Contact information and instructions on how to complete the task were also provided to the participants. The packages were hand delivered to the participants individually to maintain privacy. The questions and participant responses are shown in Table 1.

METHOD: SUMMATIVE GROUP

After a thorough review of the feedback from the nine participants from the formative group, the guideline was revised and distributed to the 10 participants in the summative group. Instructions were given and participants were given two days to ask questions or share concerns. Nine out of ten participants completed the survey within the allotted time. Based on the precoding, the same participant did not return the formative questionnaire and the AGREE II instrument and was excluded from the final analysis. To maintain privacy, acceptance to participate was determined by returning the completed survey. Also, participants were not required to include personal information on the paper survey, and were allowed to complete the survey in a private location of their choice. Security envelops were provided so participants could return sealed completed surveys in a box in a central location.

Table 1
Formative Guideline Questionnaire Data

Q1 Do you have a clear understanding of each statement contained in this guideline? If not, please provide detailed statement describing any area that you find to be unclear. Please provide any suggestion on how to make it clear and understandable for you.

Appraisers	Response		
	Yes	No	Comment
Appraiser 1	X		
Appraiser 2	X		
Appraiser 3	X		
Appraiser 4	X		
Appraiser 5	X		
Appraiser 6	X		
Appraiser 7	X		
Appraiser 8	X		
Appraiser10	X		1. I would suggest merging intro & impact - too long & similar. Relate to effect on student. 2. Under training- training all staff may be unrealistic.

Q2. Do you think that use of the guideline will achieve the following stated goal and objectives?

a. Assist the school nurse to coordinate and effectively train non-medical school personnel on diabetes management and ensure that students with diabetes have a safe learning environment.

b. Assist students with diabetes in achieving suitable diabetic management.

c. Provide a standardized process for the school nurses to provide adequate diabetes management for students with diabetes in the school.

If no, please provide feedback on how to modify it so that the goal and objectives will be achieved.

Appraisers	Response		
	Yes	No	Comment
Appraiser 1	X		
Appraiser 2	X		
Appraiser 3	X		

Appraiser 4	X	
Appraiser 5	X	
Appraiser 6	X	
Appraiser 7	X	
Appraiser 8	X	
Appraiser10	X	

Q3. Does the guideline cover all key content areas? If no, please provide information on areas that are omitted and that you would like included or addressed.

Appraiser	Response		
Appraiser #	Yes	No	Comment
Appraiser 1	X		
Appraiser 2	X		
Appraiser 3	X		
Appraiser 4	X		
Appraiser 5	X		
Appraiser 6	X		
Appraiser 7	X		
Appraiser 8	X		
Appraiser10		X	1. Maybe more description about the disease & types - like a fact sheet. 2. The DMMP suggested form is very long- shorter

Q4. Is the guideline appropriate for the settings? If not, please provide suggestion or feedback.

Appraisers	Response		
	Yes	No	Comment
Appraiser 1	X		
Appraiser 2	X		
Appraiser 3	X		
Appraiser 4	X		
Appraiser 5	X		
Appraiser 6	X		
Appraiser 7	X		
Appraiser 8	X		
Appraiser10	X		

Q5. Do you see any barrier to implementing this guideline? If so, please provide feedback on possible issues that may arise during implementation.

Appraisers	Response

	Yes	No	Comment
Appraiser 1		X	
Appraiser 2		X	
Appraiser 3		X	
Appraiser 4		X	
Appraiser 5		X	
Appraiser 6		X	
Appraiser 7		X	
Appraiser 8		X	
Appraiser10		X	

Q6. Do you find this guideline easy to follow?

Appraisers	Response		
	Yes	No	Comment
Appraiser 1	X		
Appraiser 2	X		
Appraiser 3	X		
Appraiser 4	X		
Appraiser 5	X		
Appraiser 6	X		
Appraiser 7	X		
Appraiser 8	X		
Appraiser10	X		

Q7. Are there any areas you would like to modify or change or added to the guideline? If yes, please state area and provide suggestion

Appraisers	Response		
	Yes	No	Comment
Appraiser 1	X		Include table of content, Shorter DMMP, include ed. code
Appraiser 2	X		Combine hyper and Hypo emergency plan, Shorter DMMP, Ed code
Appraiser 3	X		Shorter DMMP, Include table of content, include ed. code
Appraiser 4	X		Combine Hypo & Hyperglycemia care plan, Shorter DMMP, ed. code
Appraiser 5	X		Include table of content, DMMP too long, make it shorter, ed. code
Appraiser 6	X		Shorter DMMP, Combine the hypo & hyper emergency plan
Appraiser 7	X		DMMP too long, make form shorter, include ed. code
Appraiser 8	X		Make DMMP shorter, too long, ed. code should be included
Appraiser10	X		Merge & condense into & impact areas. Shorter DMMP. Ed code

Include fact sheet that can be also used in training. Limit training
to those in contact with student. Include education code.

DATA ANALYSIS

To analyze the guideline developed to create a standardized process for the school nurses to provide adequate diabetes management for students with diabetes in the school district, two processes were used: the formative guideline questionnaire and the AGREE II instrument. The formative guideline questionnaire was used to conduct the initial assessment with the purpose of obtaining feedback, which was used to make revisions and improvements to the draft guideline (Teaching Excellence & Educational Innovation, n.d.). To appraise the quality of the guideline, the AGREE II Instrument was used. The AGREE II Instrument is an evaluation tool that was developed to be used globally to evaluate the usability, procedural thoroughness, and quality of a practice guideline (Brouwers et al., 2010). The AGREE II instrument consists of 23 items divided into six domains. Each item addresses the quality of different parts of the guideline. In addition, the AGREE II instrument contains two overall assessment pieces that allow the evaluator to offer final appraisal of the practice guideline (Brouwers et al., 2010). The AGREE II instrument was distributed to the participants to complete, and the data obtained from the nine nurses who completed the instrument were analyzed. The two overall assessment pieces provided the final analysis and acceptance of the general guideline. Domains and scores are presented in Table 2.

.

Table 2
AGREE II Data Summary

AGREE II Domain	Percentage (%) Score
Domain1:Scope and Purpose	100%
Domain 2: Stakeholder Involvement	97.5%
Domain 3: Rigor of Development	99.7%
Domain 4: Clarity and Presentation	100%
Domain 5: Application	97.5%
Domain 6: Editorial Independence	100%
Overall Guideline Assessment	98.1%
Recommend This Guideline for use	100% Yes without modification

RESULTS

After careful examination of the responses from the formative group, the original guideline was edited and revised. There was consensus among the participants that the guideline would create a standardized process for the school nurses to provide adequate diabetes management for students with diabetes in the school district. After the revision of the guideline, it was then distributed to the summative group for final appraisal.

The summative evaluation included nine participants who were credentialed school nurses employed by the school district, and who were also the end users. These participants completed and returned the AGREE II instrument within the allotted time after evaluating the final guideline. Domain 1 addressed the scope and purpose of the guideline. This section included three questions that were applicable to this project and were scored by all participants. A score of 100% was reported in this domain. Domain 2 addressed stakeholders' involvement and included three questions that were applicable to this project. Participants reported a 97.5% score in this domain. Domain 3 addressed rigor of development and included eight items. One of the statements was not applicable to this project; therefore, no response was obtained and the score was adjusted accordingly. In this domain, a 99.7% score was obtained. Domain 4 addressed the clarity and presentation of the project and included three statements. A 100% score was obtained. Domain 5 addressed applicability and included four statements. One of the statements was not applicable, and therefore no response was obtained. Adjustment was made to the domain and a 97.5% score was obtained. Domain 6 addressed editorial independence and included two statements, but only one was

applicable to this project. No response was obtained for nonapplicable item, and a sore of 100% was obtained with appropriate adjustment made. Two additional items were included in the overall guideline assessment. For the first (rate the overall quality of this guideline), a 98.1% score was obtained. For the second (I would recommend this guideline for use), participants recommended the guideline with 100% approval score without modification. Domains and scores are presented in Table 2.
.

DISCUSSION

Ten district nurses were invited to participate in this study. A total of nine responded by completing and returning the surveys in the allotted time. Incorporation of the district nurses' recommendation and the significant data obtained from review of literature aided in the development and finalization of an evidence-based guideline that was created to provide a standardized process for school nurses to adequately manage diabetes in the school environment. The developed guideline for the care of students with diabetes in the school district was necessary because it would allow school nurses to effectively coordinate and train nonmedical school personnel on diabetes management. Furthermore, it would ensure the safety of diabetic students and diminish the disruption of academic activities due to diabetic emergencies. Moreover, it would ensure that these students could achieve academic success and full participation in school activities. It would also help to minimize the long-term health effects of diabetes.

The Stevens star model of knowledge transformation, which consists of five phases of knowledge transformation, was used as the framework to guide this project.
The first stage was the discovery research in which new data were identified by the use of traditional research designs in research studies. In the second stage, the evidence summary stage, the information derived from the literature review was presented in a scientific statement. In the third stage, the evidence derived from the literature review was used to establish a practice guideline for the care of children with diabetes in the school district. In the fourth stage, the guideline was modified based on the responses obtained from the formative questionnaire. In the final stage, the outcome evaluation stage, the summative group appraised the final guideline using the AGREE II instrument. The responses obtained from the formative group confirmed the need for the guideline, and the 100% approval by the summative group enhanced the validity of the guideline.

CONCLUSION

The established guideline will have a major impact on the manner in which the district nurses manage diabetes in the school. The guideline will provide a standardized process for the district nurses to coordinate and manage students with diabetes in the school. The guideline recognizes the role of the school nurse in assisting students with diabetes in attaining their potential. The school nurse can have an impact not only on health outcomes but also on academic performance and the general well-being of the diabetic students. For the school districts to be in compliance with ADA mandates and other federal and state laws, they must rely on the assistance of nonmedical personnel who have limited diabetes knowledge to assist in diabetes care in the school. These staff may have negative views about being responsible for the care of diabetic students. With proper training and oversight, these attitudes can be changed, which can ensure better health and safety of diabetic students.

REFERENCES

American Diabetes Association. (2003). Care of children with diabetes in theschool and day care setting. Diabetes Care, 26, s131-s135. Retrieved from http://care.diabetesjournals.org/content/26/suppl_1/s131.full

Brouwers, M., Kho, M. E., Browman, G. P., Burgers, J. S., Cluzeau, F., Feder, G.,…Zitzelsberger, L. (2010). For the AGREE Next Steps Consortium. AGREE II: Advancing guideline development, reporting and evaluation in healthcare. Canadian Medical Association Journal, 182, 839-842. doi:10.1503/090449

Butler, S., Fekaris, N., Pontius, D., & Zacharski, S. (2012). Diabetes management in the school setting.

Retrieved from http://www.nasn.org/PolicyAdvocacy/PositionPapersandReports/NASNPositionStatementsFullView/tabid/462/smid/824/ArticleID/22/Default.aspx

Centers for Disease Control and Prevention. (2012). Increasing prevalence of diagnosed diabetes — United States and Puerto Rico, 1995–2010. Retrieved from http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6145a4.htm

Centers for Disease Control and Prevention. (2015). Rates of diagnosed diabetes per 100 civilian, non-institutionalized population, by age, United States, 1980–2014. Retrieved from http://www.cdc.gov/diabetes/statistics/prev/national/figbyage.htm

Dabelea, D., Mayer-Davis, J., Saydah, S., Imperatore, G., Linder, B., Divers, J.,…Hamman, R. F. (2014). Prevalence of type 1 and type 2 diabetes among children and adolescents from 2001 to 2009. Journal of the American Medical Association (JAMA), 311(17), 1778-1786. doi:10.1001/jama.2014.3201

Kaufman, F. (2009). Medical management of type 1 diabetes (5th ed.). Alexandria, VA: American Diabetes Association.

National Association of School Nurses. (2012). Diabetes management in the school setting. Retrieved from http://www.nasn.org/PolicyAdvocacy/PositionPapersandReports/NASNPositionStatementsFullView/tabid/462/ArticleId/22/Diabetes-Management-in-the-School-Setting-Adopted-January-2012

National Diabetes Education Program. (2010). Helping the student with diabetes succeed: A guide for school personnel. Retrieved from http://www.ndep.nih.gov/publications/PublicationDetail.aspx?PubID=97&redirect=true#main

Nguyen, T., Mason, K., Sanders, C., Yazdani, P., & Heptulla, R. (2008). Targeting blood glucose management in school improves glycemic control in children with poorly controlled type 1 diabetes mellitus. *Journal of Pediatrics, 153*(4), 575-578. doi:10.1016/j.jpeds.2008.04.066

Stevens, K. R. (2015). Stevens star model of knowledge transformation. Center for advancing clinical excellence. The University of Texas health science center San Antonio.

Teaching Excellence & Educational Innovation. (n.d.). What is the difference between formative and summative assessment? Retrieved from https://www.cmu.edu/teaching/assessment/basics/formative-summative.html

Guidelines for Care of Students with Diabetes

Table of Contents

PURPOSE

The incidence of diabetes continues to rise globally and as one of the chronic conditions, it has enormous health and economic impact on both individuals and the nation as a whole (CDC, 2012). Diabetes is one of the most common chronic diseases that affect school-aged children under the age of 20 (Dabelea et al. 2014). According to American Diabetes Association (ADA) (2003), most of these children attend some form of school or daycare. To ensure that these children have a safe school environment, it is essential that the school and student healthcare teams coordinate care that is individualized to the specific needs of the student.

The purpose of this guideline is to (a) empower the school nurses to provide optimal care based on scientific studies not just on mere assumptions (Silverstein et al., 2005); (b) assist in establishing a standardized process of providing care to diabetic students within this school district; and (c) establish the role and responsibility of those involved in the student's care. For these students to be safe, achieve better long-term and best academic outcomes, it is essential that they are able to balance their meals, medications and activity levels (ADA, 2003). School personnel need to be knowledgeable of the plan of care and actions to take if needed. Parents need to provide the school with necessary information and supplies needed to adequately care for these children. In addition, they have to work collaboratively with school personnel to ensure that the students have full participation in school activities and are safe in the school environment (ADA, 2003).

DIABETES FACT SHEET

Introduction

Diabetes mellitus (DM) is a group of diseases characterized by high levels of glucose in the blood resulting from defects in insulin production, insulin action, or both. Diabetes is associated with serious complications, but timely diagnosis and treatment of diabetes can prevent or delay the onset of long-term complications (damage to the cardiovascular system, kidneys, eyes, nerves, blood vessels, skin, gums, and teeth). New management strategies are helping children with diabetes live long and healthy lives.

Type 1 diabetes accounts for approximately 5% of all diagnosed cases of diabetes, but is the leading cause of diabetes in children of all ages. Type 1 diabetes accounts for almost all diabetes in children less than 10 years of age. Type 1 diabetes is an autoimmune disease in which the immune system destroys the insulin-producing beta cells of the pancreas that help regulate blood glucose levels. Onset can occur at any age. Early symptoms, which are mainly due to hyperglycemia, include increased thirst and urination, constant hunger, weight loss, and blurred vision. Children also may feel very tired.

As insulin deficiency worsens, ketones, which are formed from the breakdown of fat, build up in the blood and are excreted in the urine and breath. Increased ketones are associated with shortness of breath and abdominal pain, vomiting, and worsening dehydration. Elevation of blood glucose, acidosis, and dehydration comprise the condition known as diabetic ketoacidosis or DKA. If diabetes is not diagnosed and treated with insulin at this point, the individual can lapse into a life-threatening coma.

The basic elements of type 1 diabetes management are insulin administration (either by injection of insulin pump), nutrition management, physical activity, blood glucose testing, and the development of strategies to avoid hypoglycemia and hyperglycemia that may lead to DKA.

All people with diabetes are advised to avoid "liquid carbs (carbohydrates)" such as sugar-containing soda, sports or energy drinks, juices (including 100 percent fruit juice), and regular pancake syrup. These liquid carbs raise blood glucose rapidly, contain large amounts of sugars in small volumes, are hard to balance with insulin, and provide little or no nutrition.

Children receiving a long-acting insulin analogue or using an insulin pump receive a rapid-acting insulin analogue just before meals, with the amount of pre-meal insulin based on carb content of the meal using insulin to carb ratio and a correction scale for hyperglycemia. Carb counting involves calculating the number of grams of carbohydrate, or choices of carbohydrate, the youth eats. Further adjustment of insulin or food intake may be made based on anticipation of special circumstances such as increased exercise and intercurrent illness. Children on these regimens are expected to check their blood glucose levels routinely before meals and at bedtime.

Type 2 diabetes used to occur mainly in adults who were overweight and older than 40 years. Now, as more children and adolescents in the United States become overweight or obese and inactive, type 2 diabetes is occurring more often in young people aged 10 or older. The increased incidence of type 2 diabetes in youth is a first consequence of the obesity epidemic among young people, and is a significant and growing public health problem. Results from the 2007-2008 National Health and Nutrition Examination Survey (NHANES), using measured heights and weights, indicate that an estimated 16 to 17 percent of children and adolescents ages 2 to 19 years had a BMI greater than or equal to the 95th percentile of the age- and sex-specific BMI- about double the number of two decades ago.

The first stage in the development of type 2 diabetes is often insulin resistance, requiring increasing amounts of insulin to be produced by the pancreas to control blood glucose levels. Type 2 diabetes usually develops slowly and insidiously. Some children or adolescents with type 2 diabetes may show no symptoms at all. In others, symptoms may be similar to those of type 1 diabetes. A youth may feel very tired, thirsty, or nauseated and have to urinate often. Other symptoms may include weight loss, blurred vision, frequent infections, and slow healing of wounds or sores. Some youth may present with vaginal yeast infections or burning on urination due to yeast infection. Some may have extreme elevation of the blood glucose level associated with severe dehydration and coma.

The cornerstone of diabetes management for children with type 2 diabetes is healthy eating with portion control, and increased physical activity.

There is no single approach to manage diabetes that fits all children. Blood glucose targets, frequency of blood glucose testing, type, dose and frequency of insulin, use of insulin injections with a syringe, or a pen or pump, use of oral glucose-lowering medication and details of nutrition management all may vary among individuals. The family and diabetes care team determine the regimen that best suits each child's individual characteristics and circumstances.

Excerpted from the National Diabetes Education Program, a program of the National Institutes of Health and the Centers for Disease Control and Prevention (2014). Overview of diabetes in children and adolescents (p.1-3).

DEFINITIONS

(a) *Diabetes Medical Management Plan (DMMP)* is a medical order written by the student's physician or healthcare provider outlining how health care related to diabetes will be provided to the student in the school environment (NDEP, 2010).
(b) *Diabetes* is a serious chronic disease in which blood glucose (sugar) levels are above normal due to defects in insulin production, insulin action, or both (NDEP, 2010, p.1).
(C) *Individualized Health Plan (IHP)* is a plan written by the school nurse based on the DMMP filled out by the student's physician that is distributed to the school personnel who are responsible for the care of the diabetic student during school hours. It includes the following: (a) when and how often student's blood sugar will be checked, (b) guideline for administering insulin, (c) meals and snacks in

relationship to students blood glucose and symptoms, (d) signs and symptoms of low and high blood sugar as well as the treatment (e) ketone testing and guideline with necessary actions, and (f) the parents emergency contacts etcetera (ADA, 2003).

(d) *Emergency Care Plan for Hypoglycemia and Hyperglycemia* is the plan of care developed by the school nurse with the help of the parent or guardian, based on the DMMP, which summarizes how to recognize and treat hypo and hyperglycemia, and who to notify in case of emergency. This is distributed by the school nurse to all the school staff that is responsible for the care of the diabetic student (NDEP, 2010).

(e) *School Healthcare Team* is a team that includes the diabetic student, the parents/guardian, student's teacher, administrators, school nurse, and other healthcare staff, counselors, school psychologist, coach and other designated staff members (NDEP, 2010).

(f) *Student's Healthcare Team* is a team of individuals that includes the diabetic student, the parents/guardian, the student's physician or healthcare provider, diabetic educator, nurse, registered dietitian, and other health care practitioners outside of the school involved in providing health need of the student (NDEP, 2010).

(g) *Guideline* is a set of recommendations that are established after critically appraising applicable literatures of research findings (ADA, 2015).

(h) Trained Diabetes Personnel are nonmedical school staffs that are trained to safely perform or supervise diabetes task in the school environment (NDEP, 2010).

TEAM RESPONSIBILITIES

Parents/Guardian: The parents/guardian is responsible for providing the school with all required materials, equipment, and necessary medications or insulin, which includes but not limited to glucometer, glucose tablets or carbohydrate source, ketone strips, the DMMP filled out by students medical provider etc. The DMMP should be filled out annually or as needed by the student's personal diabetes health care team. The district sample Diabetes Medical Management Plan (DMMP) should be used if the clinic or the doctor does not have a standard form as long as all the necessary information needed for diabetes care in the school is included. In addition, the parents are responsible for notifying the school nurse of any changes in the medical treatment and updates; the maintenance of the equipment and replacement of necessary supplies as needed (ADA, 2003).

School Nurse: The school nurse is responsible for coordinating between the student's healthcare team, parents and the school by doing the following:

- Obtain the DMMP and supplies from parents at the beginning of the each school year.
- Develop the Emergency Care Plan (ECP) based on the DMMP, review with parents/guardians and obtain their signature.
- Distribute the ECP to appropriate staff that have direct supervision of the student.
- Train school personnel in diabetes management and care as outlined in the Diabetes Management Training For School Personnel
- Ensure that all necessary documentation forms are in place.
- Develop, initiate and or contribute to the development of health and educational plans such as IHP, 504 plans and the IEP if indicated.

School Administrator: The school administrator is responsible for ensuring that designated trained diabetic personnel is available at all time to carry out diabetic related tasks as trained especially on treatment of diabetes emergencies (ADA, 2003). In addition, the administrator or administrative designee shall notify the school nurse of field trips and other extracurricular activities.

Student: The student should be allowed to provide diabetic self-care at school to the degree of the student's abilities, development and experience based on the physicians order and or as agreed upon by the student's healthcare team, school nurse and the parents (ADA, 2003).

TRAINING

School personnel will receive training based on their degree of involvement with the diabetic student, as recommended in Helping the Student with Diabetes Succeed: A guide for School Personnel (NDEP, 2010).

Level 1	General overview of diabetes and emergency measures
WHO:	All personnel who have contact with the student
WHAT:	General diabetes overview How to recognize and respond to symptoms of low and high blood glucose Who to contact for help in an emergency
Level 2	Diabetes basics and what to do in an emergency situation
WHO:	Classroom teachers and all school staff who have direct care for the student
WHAT:	Level 1 instruction Emergency Care Plan instruction Measures in case of a diabetes emergency. Guidelines for field trips and extra-curricular activities
Level 3	Specific student's diabetic care needs
WHO:	Trained diabetes staff assigned for care
WHAT:	Level 1 and 2 instruction Instruction on student's physicians order (DMMP) Completes Diabetes Management Training

Adapted from Helping the Student with Diabetes Succeed: A guide for School Personnel (NDEP, 2010).

LEGAL REQUIREMENT

Section 504 of the Rehabilitation Act of 1973; the Individual with Disabilities Education Act, formerly known as the Education for All Handicapped Children Act of 1975, and the Americans with Disabilities Act are federal laws in place to protect children with diabetes (ADA, 2003). "Under these laws, diabetes has been considered to be a disability, and it is illegal for schools and/or day care centers to discriminate against children with disabilities. In addition, any school that receives federal funding or any facility considered open to the public must reasonably accommodate the special needs of children with diabetes" (ADA, 2003, p.91.). "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)" (ADA, 2003, p. 91), with as minimal disruption to the school activities as possible (ADA, 2003).

Other laws that can impact the care of students with diabetes in the school settings are the Family Educational Rights and Privacy Act (FERPA) and the Individuals with Disabilities Education Act (IDEA). These laws help to shield the student's confidentiality. The FERPA and IDEA forbid schools from revealing student's personal identifiable data with certain exclusions in student's educational record without prior parents or guardian written consent or from a post-secondary school student that is eighteen years of age or older (NDEP, 2010).

Education Codes:
49414.5
49414.7
49452.7
49423

References

American Diabetes Association. (2003). Care of children with diabetes in the school and day care setting. Diabetes Care, 26, s131-s135. Retrieved from http://care.diabetesjournals.org/content/26/suppl_1/s131.full

American Diabetes Association. (2015a). Standards of medical care in diabetes-2015. Retrieved from http://professional.diabetes.org/resourcesforprofessionals.aspx?cid=84160

American Diabetes Association. (2015b). Statistics about diabetes. Retrieved from http://www.diabetes.org/diabetes-basics/statistics/?loc=db-slabnav

Centers for Disease Control and Prevention. (2014a). Basics about diabetes. Retrieved from http://www.cdc.gov/diabetes/basics/diabetes.html

Centers for Disease Control and Prevention. (2014b). Estimates of diabetes and its burden in the United States. Retrieved from http://www.cdc.gov/diabetes/pdfs/data/2014-report-estimates-of-diabetes-and-its-burden-in-the-united-states.pdf

Dabelea, D., Mayer-Davis, J., Saydah, S., Imperatore, G., Linder, B., Divers, J.,…Hamman, R. F. (2014). Prevalence of type 1 and type 2 diabetes among children and adolescents from 2001 to 2009. Journal of the American Medical Association (JAMA), 311(17), 1778-1786. doi:10.1001/jama.2014.3201

National Diabetes Education Program (2010). Helping the student with diabetes succeed: A guide for school personnel. Retrieved from http://www.ndep.nih.gov/publications/PublicationDetail.aspx?PubID=97&redirect=true#main

National Diabetes Education Program (2014). Overview of diabetes in children and adolescents. Retrieved from http://www.niddk.nih.gov/health-information/health-communication-programs/ndep/living-with-diabetes/youth-teens/diabetes-children-adolescents/Documents/Overview-of-Diabetes-Children-508_2014.pdf

Silverstein, J., Klingensmith, G., Copeland, K., Plotnick, L., Kaufman, F., Lafeel, L., ... Clark, N. (2005). Care of children and adolescents with type 1 diabetes. Diabetic Care, 28(1), 186-212. doi:10.2337/diacare.28.1.186

List of Diabetes Resources

American Academy of Pediatrics (AAP)
141 Northwest Point Blvd
Elk Grove Village, IL 60007
800-433-9016
http://www.aap.org

American Association of Clinical Endocrinologists (AACE)
245 Riverside Ave, Suite 200
Jacksonville, FL 32202
904-353-7878
http://www.aace.com

American Association of Diabetes Educators (AADE)
200 West Madison Street, Suite 800
Chicago, Illinois 60606
800-338-3633
http://www.diabeteseducator.org

American Diabetes Association (ADA)
1701 North Beauregard Street
Alexandria, VA 22311
800-DIABETES (800-342-2383)
http://www.diabetes.org

American Dietetic Association (ADA)
120 South Riverside Plaza, Suite 2000
Chicago, IL 6060
800-877-1600
http://www.eatright.org

American Medical Association (AMA)
515 North State Street
Chicago, IL 60654
800-621-8335
http://www.ama-assn.org

California Education Code Section 49414
http://www.cde.ca.gov
California School Nurses Organization (CSNO)
1225 8th Street, Suite 500
Sacramento, CA 95814
http://www.csno.org
916-448-5752

Centers for Disease Control and Prevention (CDC)
1600 Clifton Road
Atlanta, GA 30333
800-CDC-INFO (800-232-4636)
888-232-6348 (TTY)
http://www.cdc.gov

Children with Diabetes
8216 Princeton-Glendale Road, PMB 200
West Chester, OH 45069
http://www.childrenwithdiabetes.com

Federal laws

Section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. 794, implementing regulations at 34 CFR Part 104. http://www2.ed.gov/policy/rights/reg/ocr/edlite-34cfr104.html

Title II of the Americans with Disabilities Act of 1990, as amended, 42 U.S.C. 12134 et seq., implementing regulations at 28 CFR Part 25. http://www2.ed.gov/policy/rights/reg/ocr/edlite-28cfr35.html

The Americans with Disabilities Act Amendments Act of 2008.
http://frwebgate.access.gpo.gov/cgibin/getdoc.cgi?dbname=110_cong_bills&docid=f:s3406enr.txt.pdf

Individuals with Disabilities Education Act, 20 U.S.C. 1400 et seq., implementing regulations at 34 CFR Part 300 http://www2.ed.gov/about/offices/list/osers/osep/index.html

Family Educational Rights and Privacy Act, 20 U.S.C.1232g, implementing regulations at 34 CFR Part 99. http://www2.ed.gov/policy/gen/guid/fpco/index.html

Juvenile Diabetes Research Foundation International (JDRF)
26 Broadway, 14th Floor
New York, NY 10004
800-223-1138
http://www.jdrf.org

Los Angeles County Office of Education (LACOE)
9300 Imperial Highway
Downey, CA 90242
562-922-6111
http://www.lacoe.edu

National Association of Chronic Disease Directors Diabetes Council
2872 Woodcock Blvd, Suite 220
Atlanta, GA 30341
770-458-7400
http://www.chronicdisease.org

National Association of School Nurses (NASN)
1100 Wayne Avenue Suite 925
Silver Spring, MD 20910
240-821-1130
https://www.nasn.org

National Diabetes Education Program (NDEP)
National Diabetes Education Program
1 Diabetes Way
Bethesda, MD 20892-3600
888-693-6337
http://www.yourdiabetesinfo.org or www.ndep.nih.gov

NDEP Resources on Diabetes in the School Setting
Helping the Student with Diabetes Succeed: A Guide for School Personnel
PowerPoint presentation about Helping the Student with Diabetes Succeed

National Diabetes Information Clearinghouse (NDIC)
1 Information Way
Bethesda, MD 20892-3560

800-860-8747
866-569-1162 (TTY)
http://diabetes.niddk.nih.gov/

Weight Control Information Network (WIN)
1 WIN Way
Bethesda, MD 20892-3665
877-946-4627
http://www.win.niddk.nih.gov

Pediatric Endocrinology Nursing Society (PENS)
7794 Grow Drive
Pensacola, FL 32514
877-936-7367
http://www.pens.org

The Endocrine Society
8401 Connecticut Avenue, Suite 900
Chevy Chase, MD 20815
888-363-6274
http://www.endo-society.org/

U.S. Department of Education (ED)
400 Maryland Avenue, SW
Washington, DC 20202

Office for Civil Rights (OCR)
800-421-3481
877-521-2172 (TTY)
http://www.ed.gov/about/offices/list/ocr/index.html
Office of Special Education Programs (OSEP)
202-245-7459
202-205-5637 (TTY)
http://www.ed.gov/about/offices/list/osers/osep/index.html?src=mr

Sample Diabetes Medical Management Plan

School Year_____

DIABETES MEDICAL MANAGEMENT PLAN (DMMP)

Student's Name: DOB: ID# Grade:	
Physician's Orders	
Blood glucose monitoring at school performed by Student: ☐ Independently ☐Supervised ☐ Total Care Insulin administered at school by student: ☐Independently ☐Supervised ☐ Total Care	Diet: _____ Carbohydrate counting: ☐Independent ☐Supervised ☐ Total ☐Other needs: _____

Blood Glucose Monitoring

Target range of blood glucose 70 - 150 other: range_____

Check glucose with meter provided from home

If independent with care, student may carry meter.

If supervised or total care, check blood glucose before lunch and if student exhibits signs/symptoms of high or low blood glucose. Additional glucose checks at:

☐ before snacks ☐ before lunch ☐ before exercise ☐ before getting on bus ☐ after exercise

☐ other: _____

Treatment of hypoglycemia (low blood sugar)

5. Treatment is given for low blood sugar less than 70mg/dl or_____mg/dl
6. Treat with one of the following:

☐4 oz juice ☐ 3 glucose tabs

☐15 grams glucose gel ☐ other_____

☐Recheck BG in 15 minutes and repeat above until BG>70

7. If lunch or snack is more than one hour away give one of the following 10 minutes after the juice:

☐ 15 grams CHO choice per parent/student ☐ 7-8 gm. CHO choice per parent/student

8. **Severe low blood glucose event**, unconscious, seizure, unable to swallow

Inject Glucagon subcutaneously in the arm or thigh.

☐ 0.5mg =1/2cc (students under 10 yrs. of age)

☐ 1mg = 1cc (students 10 yrs. or older)

☐_____

☐ **Call 911** ☐ Notify parent/guardian

Treatment of Hyperglycemia (high blood sugar)

Insulin Orders ☐Humalog ☐Novolog ☐Apidra ☐ No insulin at school at this time

☐Insulin delivered by injection ☐syringe and vial ☐pen ☐pump

Have child wash and dry hands thoroughly and repeat blood sugar test if blood sugar is greater than 300 mg/dl.

4. Call doctor or parent if blood sugar is greater than_____mg/dl
5. Check urine ketones if blood sugar is greater than _____ mg/dl. Do not allow student to exercise if ketones are present. Encourage water. Notify MD if ketones are moderate to large.
6. **Insulin for Correction may be given at:**

☐ before AM snack ☐ before lunch ☐other:_____

Do not give correction insulin more frequently than every ____ hours or within 2 hours of receiving insulin for food coverage.

Blood Glucose Value/Units of Insulin for Correction:

_____ units if blood glucose from _____ to _____

_____ units if blood glucose from _____ to _____

_____ units if blood glucose from _____ to _____

_____ units if blood glucose from _____ to _____

_____ units if blood glucose from _____ to _____
_____ units if blood glucose from _____ to _____
_____ units if blood glucose from _____ to _____
_____ units if blood glucose from _____ to _____
Or
☐Use the following correction formula: ___ units for every ____ over _____mg/dl. (Blood glucose level - [minus] ____) ÷_____= units to inject
Or
☐By insulin pump set for sensitivity/correction factor: _____

Meal and Snack Insulin Coverage

Student will need to take insulin at lunch and every time carbohydrates are eaten.

☐Insulin to carbohydrate ratio: _____ units per _____grams CHO

☐Insulin delivery pump-with every carbohydrate intake (snack and lunch)
Avoid juices, sodas and any other sugar-sweetened drinks.

Insulin therapy in case of a disaster: Check blood sugar every_____ hours and give insulin as ordered.

Exercise and Sports

6. The student may participate in sports: ☐Yes ☐ No
7. Activity restrictions: ☐Yes ☐ No
8. Student should not exercise if urine ketones are present or if blood glucose is less than ____ mg/dl.
9. ☐Carbohydrate food/beverage must be available before, during and after exercise to treat and prevent low blood sugar.
10. ☐Eat 15 grams of carbohydrate before vigorous activity/exercise.

Field trips and after school activities

☐ Arrange for appropriate monitoring and access to supplies.

Physician Signature: _____Date:_____

I give permission to the school nurse, and trained designated staff members to perform and carry out the diabetes tasks outlined in this form. I authorize the school nurse to communicate with the Physician regarding my child's condition and authorize the release of information to school personnel with direct contact or supervision of my child. I will:

4. Provide the necessary supplies and equipment (glucometer, glucose tablets, ketone strips, insulin etc.)
5. Notify the school nurse/personnel of any change in my child's health status or physician.
6. Notify the school nurse/personnel of any change in the physician's orders and provide new orders or DMMP to the school.

Parent/ Guardian Signature: _____Date:_____

Diabetic Medical Management Plan (DMMP) reviewed by

School Nurse_____Date:_____

Sample Diabetes Management Training Documentation Form

Diabetes Management Training Information for Trained School Personnel

Level 1: ☐ Diabetes overview

` ☐ Signs and symptoms of high and low blood sugar ☐ How to treat

☐ Who to contact for help in an emergency

Level 2 & 3:

Student:	DOB:	ID #:	Sch:	Yr:

Blood Glucose Testing (BGT) ☐ testing equipment located at the health office ☐ carried by student

Hypoglycemia (Low Blood Glucose)

☐ **Trained to recognize signs and symptoms of low blood sugar**

Treatment

If blood sugar is less than _____ mg/dl, treat according to physician's order (see DMMP).

☐ Fast acting carbohydrate carried by student ☐ Located at the health's office

☐ Other_____

Student's usual symptoms of low blood sugar are _____

Hyperglycemia (High Blood Glucose) Treatment

☐ **Trained to recognize signs and symptoms of high blood sugar**

For blood glucose greater than _____ mg/dl, follow physician order (see DMMP) and

☐ Notify parent ☐ Notify school nurse ☐ Notify physician ☐ School Administration

Insulin Administration ***(Can only be given by a licensed health care provider or parent/parent designee)***

☐ Independent ☐ Supervised ☐Dependent ☐ Assist

Student uses ☐ Insulin Pen ☐ Insulin Pump ☐ Vial with syringe

Diet ☐ Student participates in school lunch and or snacks ☐ Meals and snacks provided by parents

Carbohydrate Counting ☐ Independent ☐ Supervised ☐ Dependent ☐ Assist

Ketone testing for blood glucose greater than _____

Glucagon ☐ Student carries glucagon ☐ Located at the health office ☐ other_____

Physical Activities/Sports ☐ No restriction ☐ Restriction_____

Documentation: Blood glucose results and treatment should documented in the diabetic log sheet

When to Call the Nurse: If BG level does not increase to at least 70mg/dl after 2 treatments for low BG or if BG is over 300mg/dl.

☐**Trained on Emergency Care Plan (Please attach)**

By signing below, I indicate that I have received basic diabetes overview and additional training based on the levels as outlined in this form.

Trained Staff Name:	Title	Signature	BGT	Carbohydrate Counting	Glucagon
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐

School Nurse: _____ Date: _____

Sample Diabetes Emergency Care Plan

DIABETES MELLITUS EMERGENCY CARE PLAN

Expires at the end of the current school year _____

Student:	DOB:	ID #:	Sch:	Yr:

EMERGENCY PHONE NUMBERS

Parent /Guardian's Address:		City:	State: CA Zip:
Mother:	Home Phone:	Cell:	Work:
Father:	Home Phone:	Cell:	Work:
Doctor:	Office:	Cell:	Fax:

MEDICATIONS

☐Humalog ☐Novolog ☐ Apidra ☐Other_____
Injection ☐Syringe and vial ☐Pen ☐Pump

EMERGENCY ACTIONS TO TAKE

If you see,	*Then do this*
Student is unconscious, lethargic, having seizures or has difficulty breathing	Call 911!
Student is showing signs or symptoms of <u>low blood sugar:</u> Student must be escorted to the Health Office. Causes: ▪ Too little food ▪ Too much insulin ▪ Extra exercise w/o snack Onset Is sudden Signs of symptoms of: ▪ Blood sugar less than 70mg/dl ▪ Nervousness/anxiety ▪ Fast heart beat/sweating ▪ Hunger/stomachache ▪ Dizziness/Mental confusion ▪ Headache/irritability ▪ Drowsiness ▪ Weakness/fatigue ▪ Slurred speech ▪ Unconsciousness	1. If the student is conscious and blood sugar is less than ____ mg/dl, immediately treat him/her with: ☐ Juice (_____oz) OR ☐Regular soda (____oz) OR ☐Glucose tablets (____) OR ☐Glucose gel (____gm) OR ☐Other: _____ 2. Never leave the student unattended by an adult. • Observe for decreased alertness or increase in severity of symptoms. 3. Student or trained personnel to assess the blood sugar. 4. If symptoms persist after 15 minutes, recheck the blood sugar and retreat as above. 5. When symptoms resolve, perform one of the following: • Meal or snack is imminent (approximately 30 minutes away), child may return to class. • Meal or snack is not imminent, but exercise will occur before the next meal, child should eat:_____ 6. Recheck the blood sugar after the second treatment and before the student returns to normal school activities. <u>Do not return to class unless the parent has been notified</u>. 7. Document on the DM monitoring record and inform the school nurse.

Student:	DOB:	ID #:	Sch:	Yr:

Student is showing signs or symptoms of <u>high blood sugar:</u>

Causes:

- Too much food
- Too little insulin
- Stress or illness

Onset Is Gradual

Signs of symptoms of:

- Blood sugar greater than 200mg/dl
- Extreme thirst
- Frequent urination
- Dry skin
- Hunger
- Blurred vision
- Drowsiness
- Nausea/Vomiting
- Other:

8. Student or trained personnel to check the blood sugar.
9. <u>Never leave the student unattended by an adult.</u>
    - Observe for decreased alertness or increase in severity of symptoms.
10. Initiate care as checked below:

☐ Notify parent and or call DM hotline when blood test result is _____ mg/dl

☐ Give 1-2 glasses of water every hour.

☐ Mild exercise

11. If student is asymptomatic and parent has approved, resume classroom activities.
12. If student develops nausea/vomiting and/or rapid breathing, call 911, parent and school nurse immediately.
13. Document on the Health Log and notify the school nurse.

I approve the above procedure in accordance with the instructions provided by my physician. I authorize the school nurse to communicate with the physician regarding my child's condition and authorize the release of information to school personnel with direct contact or supervision of my child.

Parent/Guardian: _____ Date: _____

School Nurse:_____ Date: _____

Sample Diabetes Monitoring Record

Diabetes Monitoring Record

Student: _____ DOB: _____ ID #: _____

Date	**Time**	**Urine Ketones (Neg, S, M, L)**	**Blood Glucose Level (mg/dl)**	**Carbohydrate Intake (gm CHO)**	**Insulin**				Comments	Initials
					Insulin Per Sliding Scale **(Correction)**	Insulin for Carb. Intake	Total Insulin Given (Units)	Insulin Admin. by		

Signature of Staff Providing Care	**Initials**

Signature of Staff Providing Care	**Initials**

Sample Plan for Diabetic Care During School Lock Down

Diabetic Care during a School Lock-Down *(Blood Glucose Meter Is Not Accessible)*

School Year: _____

Student: _____ DOB: _____ ID #: _____

As soon as the lockdown occurs and occasionally thereafter, ask the student if he/she is experiencing symptoms of low or high blood glucose. See below for emergency actions to take:

Emergency Actions to Take:

Symptoms of Low Blood Glucose	**Symptoms of High Blood Glucose**
Shaking Sweating Dizziness Anxious Hunger Weakness Irritable Stomachache	Extreme thirst Frequent urination Drowsiness Hunger Blurred vision
Treatment for low blood glucose (no meter available)	**Treatment for high blood glucose (no meter available)**
• Give **one** of the following: 4 oz of juice or 4 oz of soda or 3-4 glucose tablets • If symptoms persist after 15 minutes, give **one** of the following again: 4 oz of juice or 4 oz of soda or 3-4 glucose tablets • **If lunch or snack is more than an hour away,** give _____ gm of carbohydrates. • **Immediately call the principal/health office so support can be provided.** • When lockdown is over, send him/her to the health office with an adult. • *If student appears confused, becomes unconscious, is unable to safely swallow or has a seizure, inform the principal, main office and school nurse so that 911 is called.*	• Drink 1-2 glasses of water • Do not eat/drink carbohydrates (e.g candy, juice, cookies, granola bar) • **Immediately call the principal/health office so support can be provided.** • When the lockdown is over, send him/her to the health office with an adult. • *If student appears confused, has difficulty breathing, nausea/vomiting or has a fruity odor on breathe, inform the principal, the main office and the school nurse so that 911is called.*

Phone Numbers		
Main Office:	Principal:	Assistant Principal:
Health Office:	Nurse:	

Sample 504 Plan

Areas of Educational Impact	Date: Related Accommodation(s) (Student's Name) ID #	Person(s) Responsible	Frequency (when action will be taken)
Academic Testing/ Instructional Day	The student will need to be released 10 minutes before lunch and before eating classroom snacks to test BG in the Health Office and receive insulin coverage as ordered, or perform independently if he/she carries own equipment. Each substitute teacher will receive written instruction regarding the student's diabetic care. The student will be permitted to leave the classroom to check blood glucose if she/he feels symptoms of low blood glucose, and have free use of the bathroom without academic penalty.		
Blood Glucose Monitoring And Treatment of High (hyperglycemia) or low (hypoglycemia) Blood Glucose	BG monitoring will be done in accordance with the level of self-care and the designated times listed in the doctor's orders. If she/he should need assistance and the school nurse is not available, trained personnel will monitor the student's BG level and follow the physician's orders within their scope of practice. Insulin will be administered at lunch time only according to doctor's orders The location of the insulin and BG meter is in the Health Office or on student. When any staff member believes the student is showing signs of high or low blood sugar, the student should immediately have his BG checked in the Health Office; he/she should not be left alone or sent unescorted. High or low BG should be treated as set out in the doctor's orders. Any staff member who finds the student unconscious will immediately contact the school office and do the following: Call 911 Contact the school nurse or trained personnel to administer Glucagon. Contact the parent(s)/guardian(s).		
Snacks and meals	The school nurse will work with the student and his/her parents/guardians to coordinate a meal and snack schedule in accordance with the doctor's orders that will coincide with the schedule of classmates to the closest extent possible.		

	The student shall eat lunch at the same time each day or earlier if hypoglycemic. The student shall have enough time to finish lunch. The parents/guardians will provide/supply the school with snacks and quick-acting glucose (e.g. juice/glucose tablets) to treat hypoglycemia.		
Field trips and extracurricular activities	The student will be permitted to participate in all field trips and extracurricular activities; supervision for BG management to be determined by the physician's orders. Supervision will be performed by identified school personnel/parents/guardians; the student's parents/guardians may attend the field trip and are not required to accompany the student. The school nurse shall be notified of all field trips. Depending on the type of activity during the trip, specific orders may need to be obtained. (e.g. may need to check his BG before leaving or returning back to school. A teacher will need to be instructed on emergency measures to take in case the student does not feel well) When the parent/guardian cannot attend field trips going beyond the school day and there is no staff member to assist the student, the teacher shall give the school nurse at least one month notice for all field trips necessitating a licensed nurse to manage the student's BG while on the field trip.		
Exercise and physical activity	The student should participate fully in physical education classes and team sports as per doctor's orders. Physical education instructors must be able to recognize and assist with the treatment of hypoglycemia.		
Equal Treatment and Encouragement	Encouragement is essential. The student must not be treated in a way that discourages the student from eating snacks on time or from progressing in doing his/her own glucose checks and general diabetes management. If the student desires, the student shall be provided with privacy for blood glucose monitoring and insulin administration. The school staff will keep the student's diabetes confidential, except to the extent that the student decides to openly communicate about it with others.		
Following School Rules	When the student's BG is too low or too high, the student may act out in an aggressive manner. The student will not receive a discipline consequence as a result of this behavior, which is a caused by the diabetes.		
Emergency Evacuation	In the event of an emergency, the student's 504 will remain in full effect.		

	The school nurse will provide diabetes care as outlined in the plan and as per physician's orders. The parent/guardian is responsible to supply the school with all necessary medication and supplies in advance or the emergency.		

Sample Individualized Health Plan

Sample Template

Individualized Health Care Plan (IHP)

Student: _____

Grade: _____

Dates: _____

School Year: _____

IHP Completed by and Date: _____

IHP Review Dates: _____

Nursing Assessment Review: _____

Nursing Assessment Completed by and Date: _____

Nursing Diagnosis	Sample Interventions and Activities	Date Implemented	Sample Outcome Indicator	Date Evaluated
Managing Potential Diabetes Emergencies (risk for unstable blood glucose)	Establish and document student's routine for maintaining blood glucose within goal range including while at school: **Blood Glucose Monitoring** • Where to check blood glucose: ❑ Classroom ❑ Health room ❑ Other • When to check blood glucose: ❑ Before breakfast ❑ Mid-morning ❑ Before lunch ❑ After lunch ❑ Before snack ❑ Before PE ❑ After PE ❑ 2 hours after correction dose ❑ Before dismissal ❑ As needed ❑ Other: _____ • Student Self-Care Skills: ❑ Independent ❑ Supervision ❑ Full assistance • Brand/model of BG meter: _____ • Brand/model of CGM: _____		**Blood glucose remains in goal range** Percentage of Time 0% 25% 50% 75% 100% 1 2 3 4 5	

Sample Template

Individualized Health Care Plan (IHP) (Continued)

Nursing Diagnosis	Sample Interventions and Activities	Date Implemented	Sample Outcome Indicator	Date Evaluated
Supporting the Independent Student (effective therapeutic regimen management)	**Hypoglycemia Management** **STUDENT WILL:** • Check blood glucose when hypoglycemia suspected • Treat hypoglycemia (follow Diabetes Emergency Care Plan) • Take action following a hypoglycemia episode: _____ • Keep quick-acting glucose product to treat on the spot Type: _____ Location: _____ • Routinely monitor hypoglycemia trends r/t class schedule (e.g., time of PE, scheduled lunch, recess) and insulin dosing • Report and consult with parents/guardian, school nurse, HCP, and school personnel as appropriate		**Monitors Blood Glucose** (records, reports, and correctly responds to results) Never Demonstrated — Consistently Demonstrated 1 2 3 4 5	
Supporting Positive Coping Skills (readiness for enhanced coping)	**Environmental Management** • Ensure confidentiality • Discuss with parents/guardian and student preference about who should know student's coping status at school • Collaborate with parents/guardian and school personnel to meet student's coping needs • Collaborate with school personnel to create an accepting and understanding environment		**Readiness to Learn** Severely Compromised — Not Compromised 1 2 3 4 5	

(Adopted from Helping Student with Diabetes Succeed-A Guide for School Personnel, NDEP, 2010).