

Transitioning the Virtual Nursing Care for School Children With Diabetes Study to a Sustainable Model of Nursing Care

Linda Young, MS, RN, FRE, BC, and Gloria Damgaard, MS, RN, FRE

From December 1, 2010, through May 31, 2013, the South Dakota Board of Nursing conducted a pilot study, "Virtual Nursing Care for Children with Diabetes in the School Setting." The findings from the study supported the use of the virtual nurse model of care as a safe and effective method of supervising and delegating diabetes nursing care tasks to unlicensed assistive personnel (UAP), including insulin administration. This article provides an update describing the 2014 changes made to the nursing delegation rules, the protocol established for registered nurses using the virtual nurse model of care, and the training program for UAP providing diabetes nursing care.

In South Dakota (SD) in 2008, legislative efforts were moving forward to pass a bill allowing unlicensed assistive personnel (UAP) to administer insulin and provide other diabetes care in the school setting without nursing oversight. This legislation was prompted by increasing numbers of children with insulin-dependent diabetes and concerns from parents regarding less-than-adequate care of children in schools where nurses were not present (Damgaard & Young, 2014). The proposed legislation was supported by SD's Diabetes Educators Association but opposed by SD's School Nurses Association, which expressed concerns regarding the safety of having UAP administer insulin. In response to the proposed legislation and the concerns, the SD Board of Nursing (BON) conducted a pilot study to examine the safety and efficacy of nurses delegating insulin administration to trained UAP in school settings.

The pilot study, "Virtual Nursing Care for Children with Diabetes in the School Setting," was conducted from December 1, 2010, through May 31, 2013 (Damgaard & Young, 2014). The study linked trained UAP in school settings with registered nurses (RNs) by means of technology. The technology allowed nurses to virtually delegate and supervise diabetes care tasks, including insulin administration, to trained UAP. Findings from the study supported the use of the virtual nurse model of care as a safe and effective method to supervise and delegate diabetes nursing care tasks to UAP, including insulin administration. This article provides an update on the progress of this project, policy changes, and requirements for the delegation of diabetes care tasks to UAP.

Literature Review

The literature revealed several similar studies on the delegation and safety of insulin administration. Owen (2009) suggested that greater flexibility is needed regarding who may administer insulin. As the

number of people with insulin-dependent diabetes grows, the number of people needing help with administering insulin grows as well. Owen described a community pilot project in the United Kingdom (UK) involving nursing delegation of insulin administration to trained health care assistants (HCAs). The project included a 1-day training session with the HCAs. Similar to the training provided in the Virtual Nurse study, topics included monitoring and control of diabetes, blood glucose monitoring, insulin injection techniques, hypoglycemia and hyperglycemia management, and nutrition. During the first 6 months of the UK project, 29 stable patients received insulin from an HCA without any adverse outcomes. Comments by HCAs on a survey after the project revealed that they felt supported by nurse leaders and valued for their contribution in helping meet patient needs. Nurse leaders' comments were also positive. Overall, the author believed the project was successful and demonstrated increased productivity and efficiency and improved patient care.

A study conducted by Livingstone, Wolper, and Rogers (2013) in 2010 examined the efficiency and safety of insulin administration for patients in community settings in the UK. Data were collected on more than 600 patients who were unable to administer their own insulin. Insulin was most frequently administered by the community nurse teams using insulin pens or other devices. The authors concluded that errors may be reduced by encouraging once-daily insulin injections, using consistent documentation, having individualized care plans, and developing protocols to respond to blood glucose results.

Marks, Wilson, and Crisp (2014) explored the management of type 1 diabetes in Australian primary schools. The authors promoted an intensive insulin therapy regimen using four injections of insulin daily or an insulin pump to reduce the risks of long-term health complications. The authors suggested that this type of insulin therapy requires diabetes care be integrated into a child's school day. Their study included sending a survey to parents of children with type 1

diabetes who were enrolled in kindergarten through second grade; 66 parents participated. The researchers were seeking to identify and assess the type of insulin therapy provided, who provided the insulin and other diabetes care tasks, and where the insulin and other care was provided. Results revealed that more than half of the children used insulin pumps. Most children who received insulin during the school day administered the medication themselves in the classroom. Children unable to self-administer insulin most often relied on teachers, parents, and teacher's aides to help them. The authors concluded that children who were prescribed insulin via a pump and children capable of administering their own insulin were more likely to receive intensive insulin therapy during the school day. The authors recommended providing a consistent approach to diabetes care using a collaborative process involving parents and school personnel to promote a safe environment for students with diabetes. The authors did not evaluate the knowledge level or competency of the teachers and aides who helped students with their insulin therapy.

This research addresses issues raised in SD: a growing number of people with insulin-dependent diabetes and a need to rely on unlicensed persons to provide diabetes care tasks and insulin administration. These studies lend support to the safety and efficacy of nurses delegating insulin administration and other diabetes care tasks in similar school and community settings.

South Dakota's Virtual Nurse Study

The Virtual Nurse project (Damgaard & Young, 2014) was intended to discover whether diabetes care tasks, including insulin administration, could be safely delegated to trained UAP using a virtual nurse model of care delivery. The study used a nonexperimental, exploratory approach with a survey before and after the study. The survey tools measured multiple variables, including satisfaction, safety, timeliness, communication patterns, responsiveness, and technological proficiency related to the virtual nurse model of care. A total of 31 students participated in the study. Inclusion criteria were as follows:

- The child had a diagnosis of type 1 or type 2 insulin-dependent diabetes.
- The child required insulin administration by injection or pump on a regularly scheduled or sliding-scale basis during the school day.
- The child was enrolled in an SD school that did not have a licensed nurse present every day to assist with insulin administration during lunch time.
- The school had the appropriate technology to connect with the virtual nurse.
- The school was able to identify UAP willing to participate.
- A parent or guardian signed the consent for the child to participate.

Essential components of the virtual nurse model of care were virtual nurses, technology, diabetes education for UAP, and clinical interventions and supervision.

Virtual Nurses

Six virtual RNs participated in the project. All were certified diabetes educators (CDEs) employed at two hospitals serving as the hub sites. The virtual nurses provided the UAP training and competency evaluation, delegated and supervised the diabetes care tasks, including insulin administration, to the UAP, assisted with the development of diabetes medical management plans, and evaluated the clinical outcomes of the UAP biweekly.

Technology

Participating schools were evaluated by technology consultants to determine network access and equipment needs. The consultants installed identical hardware and software in each school to ensure secure Internet connections to the hub sites. The consultants also trained the UAP and virtual nurses on the technology and provided help-desk support. Use of the technology allowed the virtual nurses to see and speak to the UAP and children and to supervise the care provided by the UAP.

Diabetes Education for UAP

The schools were responsible for selecting appropriate UAP willing to be involved in the study. A clinical nurse specialist, who was a CDE, designed the curriculum and training for the UAP. The basis of the curriculum was the 2008 version of the American Diabetes Association's (2008) standardized curriculum in *Diabetes Care Tasks at School: What Key Personnel Need to Know*. The training was a total of 10 hours, which included a competency evaluation.

Clinical Interventions and Supervision

Each student had an individualized diabetes medical management plan, and the virtual nurse delegated the diabetes care tasks to the UAP according to the student's individual plan. The amount of virtual nurse consultation and supervision provided to UAP was decided on an individual basis by the virtual nurse but consultation occurred no less than once a week. Diabetes care tasks delegated to the UAP included insulin administration, blood glucose monitoring, carbohydrate counting, activity monitoring, hypoglycemic and hyperglycemic recognition and treatment, and emergency glucagon administration. All clinical interventions were recorded and provided to the virtual nurses for a weekly analysis of the safety and efficacy of care.

Results

Data revealed that 5,568 doses of insulin were administered safely by the UAP. Only one error was recorded. A wrong dose was administered because of inappropriate carbohydrate counting. Of the doses delivered, 61% were administered by insulin pump and 39% by pen or the syringe-and-vial method. Only 69 doses were administered by the syringe-and-vial method. Carbohydrate counting surfaced as an area of concern: Seventy percent of the UAP required assistance with this task. The UAP performed accurate blood glucose monitoring and responded appropriately to episodes of hypoglycemia and hyperglycemia. Overall,

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