

HEALTH CARE PROCEDURE CONSIDERATIONS AND INDIVIDUALIZED HEALTH CARE PLANS

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ABSTRACT

Teachers need to maintain a safe, healthy environment for all their students in order to promote learning. However, there are additional considerations when students require health care procedures, such as tube feeding or clean intermittent catheterization. Teachers must effectively monitor their students and understand their roles and responsibilities regarding performing these procedures. Teachers also play a vital role in teaching students to fully or partially participate in the performance of their own health care procedures in order to increase independence. Students' Individualized Health Care Plans can be used to communicate important information about students' health goals and handling common problems arising from their health care procedures.

HEALTH CARE PROCEDURE CONSIDERATIONS AND INDIVIDUALIZED HEALTH CARE PLANS

Over the past decade, health care procedures have occurred more frequently in the school setting due to advances in medical technology and interventions, as well as with educational policies requiring an appropriate

education of all students. Teachers are encountering students with complex health care needs who require such health care procedures as tube feeding, catheterization, suctioning, oxygen management, ventilator management, and medication administration (e.g., diazepam for seizures) (Gursky & Ryser, 2007; O'Dell & O'Hara, 2007). Students with specialized health care needs arrive in classrooms where teachers are often unprepared, and this lack of preparedness may negatively impact the student's health and education (Becker, Johnson, & Greek, 1996; Heller, Fredrick, Dykes, Best, & Cohen, 2000). In order to promote students' health and learning, teachers and other school personnel need accurate information about health care procedures and their roles and responsibilities regarding their students who have complex health care needs.

DPHMD POSITION STATEMENT

Two critical areas that teachers need to address in supporting students who require health care procedures have been identified in a position statement from the Council for Exceptional Children's Division for Physical, Health, and Multiple Disabilities (DPHMD, 2008). The first area is maintaining a safe, healthy environment for all students. Learning about each student's disability and health care procedure includes an understanding of the problems and emergencies that can arise related to each student's disability and health care needs, and how to respond should a problem occur. Teachers need to know specifics about the health of each child in their class, as well as general safety skills (e.g., standard precautions, general first aid, and CPR). These skills help the teacher to address health issues and promote each student's well-being.

The second area is viewing health care procedures as self-help or independent living skills that students are taught to help promote their independence (DPHMD, 2008). Just as students may be taught to use a spoon when eating or use a toilet to urinate, students may be taught to self-feed using a feeding tube or how to perform clean intermittent catheterization in order to urinate. Special education teachers, who are experts in selecting and implementing an array of instructional strategies and adaptations, are best equipped to teach students to partially participate or independently perform their own health care procedures. Teachers, along with the rest of the educational team, need to consider targeting students' health care procedures for instruction as a part of the students' Individual Education Plan (IEP).

Although the DPHMD position statement identifies key areas for teachers to address when they have students requiring health care procedures, more in-depth information is needed to effectively support these students' health needs. This article will provide more extensive information, starting with a discussion of the roles and responsibilities of school personnel in the delivery of health care procedures. The next section will explain Individualized Health

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Care Plans (IHP) and their effective use. The last sections closely examine the three areas where teachers may be involved: a) monitoring students who have health care procedures, b) performing the procedures, and c) teaching students to participate in performing their own health care procedure.

ROLES AND RESPONSIBILITIES

LEGAL MANDATES

The courts clearly specify that the schools are responsible for providing health care procedures to students who require them during school hours. In the landmark 1984 case of a student requiring clean intermittent urinary catheterization (*Irving Independent School District v. Tatro*, 1984), the Supreme Court ruled that the schools were obligated to provide health care services as related services if: the child was unable to participate in an educational program without the necessary service being performed during the school day, the child required special education services, and the procedure could be performed by a nurse or other qualified person (but not requiring a physician). This ruling was later upheld by the 1999 Supreme Court case involving a student with more complex and extensive needs who required ventilator management, tracheostomy suctioning, urinary catheterization, and blood pressure monitoring (*Cedar Rapids Community School District v. Garret F*, 1999). These rulings provided students who required health care procedures the necessary supports in the school environment to allow them to attend school and not be denied an appropriate education.

Most schools are abiding by these legal rulings, and students with health care procedures are attending schools and having their health care procedures performed as related services. However, there is some variability in who actually performs the procedures in the school setting. For example, in one national study (Heller, Fredrick, Dykes, Best, & Cohen, 2000) nurses (68.3%), teachers (60.0%), and paraprofessionals (57.8%) performed the tube feeding procedure, with some students having two or three of these personnel involved in the feeding. Large percentages of teachers and paraprofessionals were also reported to be performing other health care procedures.

RESPONSIBILITY OF IMPLEMENTING HEALTH CARE PROCEDURES

The decision as to who will perform health care services is based on state health laws, education law, state regulations, and local guidelines. The field of nursing places health care procedures within the nurses' scope of practice, according to state health laws such as Nurse Practice Acts. Nurse Practice Acts are state licensure laws that regulate nursing practice and define the scope and

standards of nursing practice, including what nurses can do and what tasks, if any, may be delegated (NASN, 2006a). Delegating certain health care procedures to certain school personnel (e.g., teachers or paraprofessionals) occurs after the student is assessed, delegation is determined to be appropriate, and proper training and supervision are put in place. Delegation of certain health care procedures allows the nurse to have time in the classroom for health teaching and direct student contact (Spriggle, 2009). Delegation is sometimes necessary as nursing ratios have been reported as high as 1:4,893 (NASN, 2009) when the recommended nurse-student ratio is 1:750 for the general population and 1:125 with a population of students with complex health care needs (NASN, 2006b).

School administrators may delegate health procedures to clinical aides, teachers, paraprofessionals, and other school staff without administrators having an understanding of the regulatory parameters that guide delegation (Resha, 2010). This is relevant when laws do not mandate that health care procedures be provided by professional school nurses. Without having a licensed nurse to address the student's health care needs, emergency situations or inappropriate care may occur. Often school administrators may not realize that a simple procedure done at home is typically held to a different and more rigorous protocol at school (e.g., a procedure may need to be sterile at school and not at home based on nursing assessment and physician's orders). Also, a student's response to the procedure in the school setting may differ from the response in the home setting (Resha, 2010). Nurses do not simply perform health care procedures: they assess the situation, environment, and student; make judgments regarding appropriate interventions; and develop an appropriate plan of care to meet the needs of each individual.

Legal rulings support the role of school nurses in determining the delegation of health care procedures. For example, in *Mitts v. Hillsboro Union High School District* (1987), a school principal delegated intermittent urinary catheterization of a student with spina bifida to a school health assistant, despite a school nurse being present. The court asked the State Board of Nursing (which is the governmental agency responsible for regulating nursing practice) for their opinion. They ruled that the school principal was practicing nursing without a license when he assumed responsibility for assessing, planning, and delegating health care for the student, and the health assistant was unlawfully practicing nursing (Pohlman, 2005; Resha, 2010). Another case involved a due process hearing in which the hearing officer cited the state's Nurse Practice Act in a response to the parents of a child with multiple disabilities who wanted the teacher to perform tracheostomy care and suctioning in the classroom, instead of the nurse who removed the student from the classroom to perform the procedure. This case was taken to federal court in *Moye by Moye v. Special School District no. 6, St. Paul, Minn* (1995), which upheld the decision of the hearing officer and supported that it is the professional responsibility of the school nurse to use

professional judgment as to the needs of the student and other students in the classroom (Gelfman & Schwab, 2001; NASN, 2006a). In a more recent case in California Superior Court, *American Nurses Association et al v. Jack O'Connell, State Superintendent of Public Instruction et al*, (American Nurses Association, 2008), the courts overturned the school policy allowing unlicensed personnel to administer insulin to school children when licensed nurses were not available. Having only nurses perform this procedure was in line with this state's Nurse Practice Act (American Nurses Association, 2008). The court ruling reinforced the authority of State Boards of Nursing to make rules governing nursing practice and protect school children by assuring only qualified individuals administer insulin, which can easily cause serious harm if done incorrectly (Block, 2009).

INDIVIDUALIZED HEALTH CARE PLAN

An Individualized Health Care Plan (IHP) specifies roles and responsibilities for the student's care and delineates basic and important information about the student's health needs and health care procedures. It is a written plan of action that outlines the provision of health care services that are intended to achieve certain student outcomes. These plans are created for students whose health care needs affect (or may affect) safe and optimal school attendance and academic performance (NASN, 2008). There are variations on the form of an IHP, with some containing an extra section so that school personnel know what is to be monitored and what actions to take for common problems that can occur. When this and/or other extra sections are present, the IHP may continue to be referred to as an IHP (as in this article), or as an expanded IHP (Heller & Tumlin, 2004).

The IHP disseminates information about student's health needs, provides health goals and outcomes, specifies training needs, and delineates who is to perform the procedure, evaluate care, and provide a continuity of care (Esperat, Moss, Roberts, Kerr, & Green, 1999; Herrmann, 2005). Although the nurse is ultimately responsible for creating an IHP (NASN, 2006a), the IHP should be a collaborative document with input from the student, parents, educators, school personnel, health care providers, and others (NASN, 2006a; NASN, 2006c). For special education students, the IHP is contained in the IEP or is attached to it (Council on School Health, 2008).

GENERAL INFORMATION AND STUDENT HISTORY

The first section of an IHP provides general information as well as the student's history (see Figure 1). This section usually contains: 1) student history and data, 2) the student's condition, such as a list of the student's medications

and procedures, allergies, diet needs, activity restrictions, positioning and mobility needs, form of communication, and transportation needs, 3) contact information for the parents and physician, and 4) general requirements of the IHP (e.g., date of approval of IHP, and frequency of review) (Heller, 2009; Rueve, Robinson, Worthington, & Gargiulo, 2000).

NURSING PLAN OF CARE

The second section of the IHP is the Nursing Plan of Care. The IHP is based on the nursing process and covers assessment, nursing diagnosis, planning

Figure 1. Example of components of an IHP for student requiring tube feeding

I Student Information and History

Name: Mary Fox Date of Birth: 2/19/98 School: Pleasant Day School Teacher: Ms. Smith Parents: Mr. & Mrs. Fox (404-333-3333) Other Emergency Contact: Mr. Lee (414-641-2222) Physicians: Dr. Gray, neurologist (404- 222- 2222); Dr. Su, internal med (404-555-5555) IHP Approved: 10/1/10 Next review date: 10/1/11 Person to contact re IHP: Ms Ray, RN

Mary has a severe spastic cerebral palsy and absence seizures. Due to severe reflux, she is unable to eat by mouth and receives nutrition through a PEG tube. [In an actual IHP, this section would contain more information on student's history and condition.]

II Nursing Plan of Care

- A. Assessment: Mary has reflux and mild aspiration and receives feedings through PEG tube
- B. Nursing Diagnosis: Risk of aspiration
- C. Goal: Prevent aspiration during gastrostomy feedings
- D. Interventions:
 - 1) Aspiration Precautions: a) Sit up 90°, b) Hold feedings for >100 ml residual volume.
 - 2) PEG Tube Care: a) Teach assigned school personnel how to perform tube feeding,
 - b) Collaborate with teacher regarding teaching student to participate in procedure.
- E. Outcome:
 - 1) Ease of breathing (score 1 - 5 with 5 being not compromised)
 - 2) Positioning in upright position (score 1 - 5 with 5 being consistently demonstrated)

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- 3) Teacher competence (score 1 - 5 with 1 being 5 being 100% competency)

III Action Plans for School Personnel

- A. Conditions Requiring Monitoring and Interventions: Absence Seizure
Mary's absence seizures appear as staring and lip smacking. Record time seizure occurs and length of seizure activity. Reorient Mary to classroom activities when seizure ends.
- B. Specialized Information for Health Care Procedure: Tube Feeding
Information: (include information on type of tube feeding, route, formula and its preparation, schedule of feeding, and step by step procedure of how to perform tube feeding for this student)
- C. Common Health Care Procedure Problems and Actions
 - 1) Aspiration: Stop feeding for signs of aspiration (e.g., coughing, rapid respiratory or heart rate) and call school nurse. Call 911 if difficulty breathing.
 - 2) Tube displacement: Stop tube feeding. Call school nurse. Father will replace tube.
 - 3) Nausea, vomiting, cramping, diarrhea: Stop tube feeding. Check for spoiled formula incorrect procedure (e.g., tube feeding going too fast, excess air entering stomach), signs of illness.
 - 4) Infection: Observe if site around tube is swollen, red, has a discharge. Notify parents and record observations in health report.
 - 5) Leaking stomach contents: Check clamp secured correctly. If still leaking, call nurse.
 - 6) Clogged tube: Milk the tube, flush with water as per protocol.

(establishment of goals or outcomes and the intervention(s) pertaining to those goals), implementation and evaluation of the outcomes (Nettina, 2010). For example, the IHP may include such interventions as positioning student upright after tube feeding to prevent aspiration or teaching school personnel to deliver tube feedings.

ACTION PLANS FOR SCHOOL PERSONNEL

An IHP may contain an additional third section known as Action Plans for School Personnel (Heller, 2009; Heller & Tumlin, 2004). This section is divided into three parts: a) conditions requiring monitoring and interventions, b) specialized information for health care procedures, and c) common health care procedure problems and actions.

Conditions Requiring Monitoring and Interventions. Teachers monitor for problems or conditions relating to a student's health or physical impairment. Included under monitoring are the signs or symptoms to be monitored as well as specific actions to take. Students with epilepsy, for example, will need to be monitored for seizures and the IHP lists the specific signs and symptoms indicative of the student's seizure (e.g., staring, lip smacking) and the actions to take when they occur (e.g., note time and length of seizure). School nurses act as health consultants, providing information to teachers and school personnel about health practices and the student's health problem, disability or disease (Smeltzer, Bare, Hinkle, & Cheever, 2008).

Monitoring may occur in any of six major categories. These categories are: a) monitoring for acute episodes and complications (e.g., seizures, asthma attack), b) monitoring for medication effects or equipment malfunction (e.g., ADHD medication effectiveness), c) monitoring for degenerative changes (e.g., motor skill decline in Duchenne muscular dystrophy), d) monitoring for fatigue or exercise intolerance (e.g., fatigue or exercise intolerance in children with certain heart defects), and e) monitoring for complication of health care procedures (e.g., aspiration) (Heller, 2009). The last type of monitoring of health care procedures may be located in the last part of the IHP under "Common Problems and Actions," which is after the next section on "Specialized Information".

Specialized Information for Health Care Procedures. The IHP contains information about the equipment used in the procedure, the type of procedure, the timing of the procedure and information specific to the health care procedure. For example, the specialized information about the tube feeding health care procedure would include the type of tube feeding (e.g., bolus method, continuous), formula type and its preparation, and schedule of feeding. Also listed are step by step written directions for implementing the health care procedure. This procedure is usually attached to the end of the IHP.

Since a physician's order is necessary for the procedure to be performed at school (Resha, 2010), the nurse or teacher usually sends a copy of the steps of the procedure to the physician for approval. A signature line can be added to the bottom of the procedure for the physician to sign (Heller, Forney, Alberto, Schwartzman, & Goeckel, 2000).

Common Health Care Procedure Problems and Actions. One of the most helpful aspects of the IHP is the description of common problems that can occur with each procedure and the actions to take should they occur. The particular course of action depends upon what is medically appropriate and what the parents and school personnel are capable of doing. For example, if a gastrostomy tube is pulled out, it should be replaced within hours. For one

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student, the best course of action is to call the mother, who has been trained to replace the tube, to come and replace it. However, for a different student, the team may have decided that the student goes to an emergency room to have it reinserted.

EMERGENCY CARE PLAN

An IHP should not be confused with an Emergency Care Plan. An Emergency Care Plan may be written as an outcome of an IHP when there is a known risk of an emergency (e.g., uncontrolled seizures, insulin reaction). Although there may be some overlap of problems or emergencies between the IHP and Emergency Care Plan, the IHP is more expansive and contains common problems that are not necessarily emergencies, but need to be addressed (e.g., nausea, vomiting, infection, and blocked tube when trying to tube feed). The Emergency Care Plan contains directions about what to do for the specific emergency, in addition to other items (such as information to be taken to the hospital). The Emergency Care Plan is written in easy to understand language and distributed to appropriate staff and may be attached to the IHP. The nurse should also train the staff who would respond to the emergency (NASN, 2006a).

TEACHER'S ROLE IN MONITORING STUDENTS REQUIRING HEALTH CARE PROCEDURES

As discussed in the IHP, there are several common problems that can occur with each health care procedure. A student who requires a health care procedure during the school day needs to be monitored for these related procedural problems, no matter who is designated to perform the procedure. Monitoring students for potential problems is part of maintaining a safe and healthy environment for all students.

Monitoring health care procedures may determine: a) a need or a potential need for a health procedure, b) the effectiveness of the health care procedure, and c) any problems regarding the health care procedure. For example, teachers and school personnel may need to monitor the need for suctioning based upon whether the student shows signs of respiratory congestion. Monitoring for the effectiveness of a procedure, such as suctioning, may include observing the student's skin color, activity, breathing effort, breath sounds, level of restlessness, and other signs. Monitoring for problems with the suctioning may include such areas as monitoring for ineffective suctioning and monitoring for tracheostomy tube dislodgement. An IHP should specify areas that need to be monitored, as well as the common problems that can occur for each procedure. Directions as to what to do should problems arise are based upon discussion of the team of needs and procedures as well as what is medically advised by medical/nursing personnel (Heller & Tumlin, 2004).

There are several common problems that can occur with each type of health care procedure. Figure 2 shows several different health care procedures

Figure 2. Examples of common problems that need to be addressed on IHPs.

<p>Clean intermittent catheterization: procedure involving intermittently inserting a tube into the bladder to empty urine at scheduled times for those who can not empty their bladders completely.</p> <p>Common problems:</p> <ul style="list-style-type: none"> Infection Inability to pass catheter Omission of catheterization No urine on catheterization Urine between catheterization Soreness, swelling, and discharge Bleeding <p>Colostomy care: procedure typically involving emptying or changing a bag that is placed over an opening in the abdominal area where feces escapes for those who have certain conditions affecting their intestines.</p> <p>Common problems:</p> <ul style="list-style-type: none"> Gas and odor Leakage Skin problems around the stoma Bleeding from the stoma Diarrhea or vomiting Obstruction Change in stoma appearance <p>Tube feeding: procedure involving giving fluids or nutrition through a tube into the stomach or small intestine for those who can not take fluids or nutrition by mouth.</p> <p>Common problems:</p> <ul style="list-style-type: none"> Aspiration Tube displacement Nausea, vomiting, cramping Diarrhea Site infection Leaking of stomach contents Clogged tube 	<p>Tracheostomy: a hole in the neck to the windpipe (trachea) (that usually has a tracheostomy tube in the hole) that the person breathes through when they can not breath through the nose/mouth or when using a ventilator long term.</p> <p>Common problems:</p> <ul style="list-style-type: none"> Dislodgement of the tracheostomy tube Obstruction Aspiration Irritation or bleeding at stoma Respiratory infection <p>Tracheal Suctioning: procedure of inserting a tube momentarily into the windpipe (through a tracheostomy tube or through the nose) to remove respiratory secretions for those who can not remove respiratory secretions by coughing.</p> <p>Common problems:</p> <ul style="list-style-type: none"> Ineffective suctioning Obstruction Negative reactions to suctioning Bleeding <p>Oxygen Delivery: Providing a higher level of oxygen than found in room air for those who need more oxygen.</p> <p>Common problems:</p> <ul style="list-style-type: none"> Poor or no oxygen flow Oxygen leak Hypoxia Over oxygenation <p>Ventilator Management: Machine that supports or provides breaths for those who can not breathe adequately on their own.</p> <p>Common Problems:</p> <ul style="list-style-type: none"> Ventilator malfunction Respiratory distress Obstruction and high-pressure alarm Air leak and low-pressure alarm Power alarm
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that teachers may encounter in the school setting. Each health care procedure has a listing of some of the most common problems that require monitoring. For example, students requiring clean intermittent catheterization, may have such problems as: urinary tract infection; inability to pass the urinary catheter; omission of catheterization; no urine on catheterization; urine between catheterization; soreness, swelling or discharge from the urethra or stoma; and/or bleeding (Heller, Forney, et al., 2000; Lippincott's Nursing Procedures, 2009). On the IHP, each of these should be listed as common problems with directions of what steps to take should one occur. Who the IHP specifies to contact can vary by student and by problem. For example, the IHP could direct the teacher to immediately perform the clean intermittent catheterization procedure if an omission of the procedure occurred, contact the parents for a suspected urinary tract infection, and contact the nurse for any bleeding. Another student may have different contacts or actions to take, such as communicating with the nurse for any suspected infection, instead of reaching the parents directly. The nurse should be contacted for any questions or concerns.

TEACHERS PERFORMING HEALTH CARE PROCEDURES

NURSE'S ARRANGEMENTS

In order for the teacher, paraprofessional, or other non-medically licensed school personnel to perform a health care procedure several arrangements must have been made. First, the school nurse should have decided that the health care procedure needed by this student is possible for the teacher or paraprofessional to implement. This means that the procedure is in the nurse's scope of practice, is routine with a predictable outcome, is based on medical orders, is repeated frequently, is performed according to an established sequence of steps, and does not involve assessment, interpretation, or decision making. Next, the nurse determines who is the appropriate person to perform the procedure (i.e., who is available, willing and competent to perform the health care procedure at the specified time). Then, the nurse considers the amount of training the person will need and the feasibility of having that person do the procedure (along with the regular other duties of this person). Even when nurses delegate, they remain accountable for the health care procedure (NASN, 2006d).

TEACHER TRAINING ON HEALTH CARE PROCEDURES

If a teacher or other school personnel is to perform the health care procedure, training should be provided by a registered nurse or other qualified medical personnel (Bursky & Ryser, 2007; Heller, Forney, et al., 2000). Although

the child's parents may be performing the procedure at home and their input is important, it is not appropriate to have the parents do the training. The procedure may need to be done differently at school, and there is always the possibility that the parents may be doing something incorrectly. The nurse will usually train more than one person so back-up personnel are available. The nurse then will decide if and when the designated personnel are competent to perform the procedure. However, if a designated person remains uncomfortable performing the procedure, it is that person's responsibility to notify the nurse so that someone else can be selected to perform the procedure.

The bulk of the training is centered on the correct implementation of each step of the health care procedure and the rationale of why it is done a certain way. Written steps are helpful, in conjunction with the nurse modeling and guiding at each step. Personnel will also be trained to identify any side effects, problems, or complications and appropriate interventions (as specified on the IHP) (Heller, Forney, et al., 2000).

Training may occur in a number of different ways, but typically there is a small group with the student, nurse, and school personnel learning the procedure. It is important that training occurs with the specific child who needs the procedure because health care procedures are considered nongeneralizable across students (Heller, Forney, et al., 2000). Training and documentation of the training are student-specific, not procedure specific. However, some training may be done as a group (Gursky & Ryser, 2007), with supervision of skills as applied to the specific student after the group training. Regardless of how the training is performed, the nurse should periodically monitor the teacher or paraprofessional to be sure the procedure is being implemented as trained. Also it is important that the nurse be available for any questions or concerns.

CONSIDERATIONS WHEN PERFORMING HEALTH CARE PROCEDURES

There are several considerations to take into account when the teacher (or other designated person) is responsible for performing the health care procedure. After gathering materials at the start of the procedure, the teacher should inspect the equipment for any obvious defects (e.g., cracked syringe barrel, break in the catheter). Also, expiration dates should be checked (e.g., formula for tube feeding, sterile water containers) (Lippincott's Nursing Procedures, 2009). If there is a problem with the equipment or supplies, the teacher will need to contact the nurse or parent, or use alternate equipment if it is available.

When performing the procedure, the teacher may want to refer to a written copy of the steps of the procedure to be sure each one is being done

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correctly. Also, it is important that the teacher also observe the student for any problems or difficulties while the procedure is being done, as well as after the procedure is over. If any problems occur, the teacher should follow the directions on the IHP for the specific problem (Heller & Tumlin, 2004).

When the procedure is finished, the teacher will need to document that the procedure was performed and how the student tolerated the procedure. If the student had any problems, these would be included on the documentation (Lippincott's Nursing Procedures, 2009). Documentation can occur on a medication sheet (with a space for the procedure) or any other form that is easy to use.

After performing the procedure, the teacher will need to clean the supplies (for those that are not disposable) and put them back where they are kept. Cleaning and storage of supplies will vary by equipment, procedure, and student. The nurse will provide directions regarding these areas. Also, should supplies not be available or require replacement, the school will need to follow their policy regarding supply management. In most situations it is usually the family's responsibility to provide supplies.

TEACHING STUDENTS TO PARTICIPATE IN THEIR HEALTH CARE PROCEDURES

DETERMINATION OF GOALS

The student's team determines if the student should learn to participate in the performance of his or her own health care procedure as a self-help skill or independent living skill. If it is appropriate for the student to participate, the level of participation must be established. Instruction is aimed at one of four levels or a combination of levels: a) independent performance, b) partial participation, c) directing another person, or d) knowledge of task (Heller, Forney, et al., 2000).

Using tube feeding as an example, some students may learn to do the entire procedure themselves and be at an independent level. Students, who are functioning at a partial participation level, may only be taught to perform part of their procedures such as preparing the formula or holding the syringe barrel. Partial participation is important since it increases the students' independence, decreases learned helplessness and may assist those performing the procedure. Students who have severe physical disabilities and are unable to physically perform the necessary health care procedure may learn to direct another person on how to perform the procedure. In some cases, the steps may be programmed into their augmentative and alternative (AAC) communication

devices. The final level is knowledge of the task in which teachers may instruct their students in a wide range of areas pertaining to the health care procedure (e.g., learning when tube feeding is to occur, learning about problems and what to do about them).

Due to their expertise in instruction, teachers play a primary role in teaching students to participate in their health care procedures. Other members of the team may also play important roles, such as the nurse providing training on the procedure, the parents providing knowledge about their child, the occupational therapists providing information about fine motor skills, the physical therapist providing expertise on positioning, or a speech language pathologist providing information on the augmentative communication system being used to converse about the health care procedure. However, the teacher will take the lead in determining the best instructional strategies, adaptations, and approaches to foster learning.

TASK ANALYSIS

In planning to teach a student to perform all or part of a health care procedure, sequential steps in a specific task analysis must be developed. This requires breaking down the procedure into small, measurable steps (Snell & Brown, 2011). They can be taken from the written procedures and further broken down into smaller steps, depending upon the needs of the student. For example, some students may need multiple steps for hand washing while others only need it delineated as one step.

One common health care procedure is tube feeding. In this procedure, nutrition, fluids, and/or medications are given through a tube that goes into the stomach or intestine. The tube may go through the nose into the stomach (nasogastric [NG] tube) or have been surgically placed through the abdominal wall into the stomach (percutaneous endoscopic gastrostomy [PEG] tube or gastrostomy tube). Tube feeding is used for individuals who can not take food or fluids by mouth or who can not take sufficient amounts of food. For example, some children with severe spastic cerebral palsy may need tube feedings due to such problems as difficulty swallowing, hyperactive gag reflex, strong tongue thrust, or high incidence of aspiration (food going into the lungs). Tube feedings may occur on a continuous basis or an intermittent basis (in which feeding is given at scheduled times). An example task analysis for tube feeding is in the first column of Figure 3. This example uses an intermittent bolus method in which the tube feeding occurs over a short period of time through a syringe barrel in which the prepared food is added repeatedly until all has been given and the tube has been flushed with water.

Figure 3. Example of the first ten steps of a discrepancy analysis for tube feeding with a task analysis in the first column.

TASK ANALYSIS	CS TLS*	SCORE	STUDENT ERROR (write what student does or how has diffi- culty)	PERFORMANCE DISCREPANCY L= Learning P= Physical H= Health/Endurance M= Motivation S= Sensory C= Communication	ADAPTATIONS
Mark's Tube Feeding via a gastrostomy tube		I= Independent P= Prompt			
1. Wash hands		P	Dislikes water	M	Alcohol based hand sanitizer
2. Retrieve equipment		I			
3. Prepare formula		P	Unsure how	L	
4. Clamp tube		P	Difficulty clamping	P	More practice
5. Remove plug	CS	P	Unsure how	L	
6. Attach syringe barrel	CS		Unsure how	L	
7. Pour formula into barrel		P	Missing barrel	P	Attach a funnel
8. Hold syringe barrel proper height		P	Difficulty holding arm	H	Let arm rest against wall
9. Add more formula before it empties	TLS	P	Not know when to pour	L	Put a red line on barrel
10. When formula near empty, add water	TLS	P	Now know when to pour water	L	

*CS = Caution Step, TLS = Time-limited Steps

CAUTION STEPS AND TIME-LIMITED STEPS

Prior to assessment or instruction of the health care procedures, the teacher will need to identify the caution steps and time-limited steps (Heller, Bigge, & Allgood, 2010; Heller, Forney, et al., 2000). Caution steps are specific parts (or steps) of the procedure in which the student could incur injury by making a quick, jerking, or incorrect movement. For example, removing or attaching the plug (or syringe barrel) in the tube feeding procedure are caution steps since the student is pulling or pushing on the opening of the PEG tube. The student could inadvertently pull the tube out of the stomach with an incorrect movement, especially when jerky movements are present as in those with spastic cerebral palsy. Time-limited steps are actions that must be completed in a certain amount of time or problems could occur. During tube feeding, adding food or water into the syringe barrel is a time-limited step. If additional food or water is not added into the syringe barrel before the syringe barrel empties, air will be introduced through the tube. Having air introduced can result in abdominal cramping and discomfort. (On Figure 3, the second column has the caution steps and time-limited steps marked.)

When a caution step or time-limited step is identified, the teacher needs to provide shadowing (or a more intrusive prompt) when teaching that step. In shadowing, the teacher keeps her or his hand within an inch of the student's hand until the caution step or time-limited step is complete (Heller, Bigge, & Allgood, 2010). This allows the teacher the ability to quickly intervene to prevent errors.

USING A DISCREPANCY ANALYSIS TO DETERMINE ADAPTATIONS

PERFORMANCE DISCREPANCY

Prior to instruction, the teacher may assess which steps of the procedure the student can perform correctly and if there needs to be any adaptations. Some students are so accustomed to the procedure being done to them as they sit passively, that they have very little understanding of how the procedure is performed. Other students may know some of the steps already. When a student cannot perform a step of the procedure, the teacher identifies the reason the student is unable to perform the step. The discrepancy between how the student performs the step and how the step should be performed is referred to as a performance discrepancy. There are several different types of performance discrepancies used to explain why the student is unable to correctly perform a step of the procedure: a) learning, b) physical, c) health/endurance, d) motivation, e) sensory, and f) communication (Heller, Forney, et al., 2000).

By closely observing the student, the teacher attempts to determine which type of performance discrepancy is occurring and then establishes what

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adaptation or intervention is needed. The performance discrepancy may be due to the student not knowing the step (known as a learning performance discrepancy), in which case systematic instruction is needed. However, there may be other reasons for the student not being able to perform a step of the procedure. For example, a student who cannot pour the formula into the syringe barrel due to fine motor reasons (i.e., physical performance discrepancy) may be able to do so when a funnel is attached to the syringe barrel to make pouring easier. Another student may lack endurance to hold up the syringe barrel (i.e., endurance performance discrepancy) and may need the adaptation of performing the procedure beside a wall where he can rest his arm. A student who does not like hand washing due to a dislike of water, exhibiting a motivation performance discrepancy, may be addressed by using reinforcement or using an alcohol based hand sanitizer instead. A student who has a vision impairment may have difficulty seeing the formula in the syringe barrel due to a sensory performance discrepancy and may require a bright contrasting color on the back of the syringe barrel. A student learning to alert the teacher as to possible problems may be unable to do so due to a communication performance discrepancy when the communication device does not have the proper vocabulary. Careful analysis is needed to identify the type of performance discrepancies that are influencing performance and how these can be addressed.

Components of a Discrepancy Analysis and Discrepancy Analysis

Form. There are several different components of a discrepancy analysis. The teacher will need to: a) perform a task analysis of the health care procedure, b) identify the caution steps and time-limited steps, c) assess the student on each step of the task analysis, d) note the exact error the student makes, e) analyze the student error and determine the performance discrepancy, and f) select appropriate adaptations based on the identified performance discrepancies (Heller, Forney, et al., 2000).

As seen on the discrepancy analysis form in Figure 3, each of the components of a discrepancy analysis is represented by its own column (Heller, Forney, et al., 2000). In this example, the first 10 steps of a tube feeding procedure are in column one. The caution steps and time-limited steps are identified in column two. The teacher assesses whether the student can independently perform any of the steps which is in column three. In this case, the student was able to retrieve the equipment for the tube feeding independently, but needed prompting on all other steps. The exact errors the student made when performing (or trying to perform) each step when being assessed is written in column four. Next, the teacher examines the errors in column four and determines the performance discrepancies (in column 5) and any needed adaptations (in column 6).

In Figure 3, the discrepancy analysis is on Mark's ability to tube feed himself. On the first step of the task analysis of washing hands (first row on step 1), Mark had to be prompted to wash his hands and displayed dislike of the water. The teacher determined that the student's dislike of water was a motivation performance discrepancy so the adaptation of using an alcohol based hand sanitizer was selected. In another example, in step 7 of the task analysis of pouring formula into the syringe barrel, the student needed prompting and was missing the syringe barrel. The teacher determined that the student's error of missing the syringe barrel was a physical performance discrepancy so the teacher adapted the syringe barrel by attaching a funnel. For step 9 of adding additional formula to the syringe barrel before the existing formula completely empties, the student's error of not knowing when to pour more formula into the syringe barrel was determined to be a learning performance discrepancy. An adaptation of putting a red line on the syringe barrel as an antecedent prompt to help the student learn when to pour was selected. Each performance discrepancy has an adaptation, unless it is a learning performance discrepancy. In those cases, there may be no adaptations written in the last column if the instructional strategy is thought to be sufficient to promote learning.

INSTRUCTIONAL STRATEGIES AND DATA

After determining any adaptations or actions needed from the discrepancy analysis, the teacher selects the most appropriate instructional strategy. Health care procedures have been taught using a wide variety of methods and often a combination of methods are used. Some of these include: educational booklets (Martins, Soler, Batigalia, & Moore, 2009), initial group instruction (Cobussen-Boekhorst et al, 2010); family discussions with increasing levels of child participation (Katrancha, 2008); use of a special doll or model (Cobussen-Boekhorst, Weide, Feitz, & Gier, 2000; Robertson, Alper, Schloss, & Wisniewski, 1992); prompting procedures (Tarnowski & Drabman, 1987); demonstration and role-play; games and exercises; and teaching with computers (Bray & Sanders, 2007). These instructional strategies as well as others may be selected, depending upon the student's age, motor skills, intellectual ability, receptive communication skills, and motivation.

Once the instructional strategy is determined, the instructional strategy and the task analysis are placed on a data sheet where the student's progress is recorded. Figure 4 depicts a possible data sheet that may be used to teach health care procedures (Heller, Forney, et al, 2000). In this figure, the top of the data sheet has the adaptations determined from the discrepancy analysis (e.g., use of a funnel, wall for support, line on syringe barrel). The specific instructional strategy being used to teach the procedure is also placed on the

Figure 4. Sample Date Sheet for Instruction.

Student: Mark W. Procedure: Tube Feeding Key: I = Independent (correct)
 Instructional Strategy: Least Prompts VC= Verbal cue (for each step)
 Antecedent Prompts: Line on barrel G= Gesture
 Adaptations: Use of funnel, wall for support PP= Partial physical guidance
 Caution Steps (CS)/ Time-limited Steps (TLS) = minimum prompt shadowing FP= Full physical guidance

		Date:			Error Analysis		
		CS/TLS	3/1	3/2	3/3		
15.	Replace plug	CS	PP				
14.	Remove syringe barrel	CS	PP				
13.	Clamp tube before all of water empties		PP				
12.	Add remaining water to syringe barrel	TLS	PP				
11.	Before formula empties, add water to syringe barrel	TLS	PP				
10.	Repeat adding more formula until all added	TLS	PP				
9.	Add more formula before it empties	TLS	PP				
8.	Hold syringe barrel proper height		I				
7.	Pour formula into barrel		VC				
6.	Attach Syringe barrel	CS	FP				
5.	Remove plug	CS	FP				
4.	Clamp tube		PP				
3.	Prepare formula		PP				
2.	Retrieve equipment		I				
1.	Wash hands		VC				

correct/ # total

top and the scoring key is filled out. In this figure, the teacher will use the System of Least Prompts with the selected prompts being: independent, verbal cue, gesture, partial physical guidance and full physical guidance. Each of these prompts is written in the key with their abbreviation. Different students may use different prompts so the data sheet will need the exact prompts written in for each student.

In the main part of the data sheet, the teacher records each step of the procedure. In figure 4, each step of the tube feeding procedure is placed in the first column. These are the same steps that are copied from the discrepancy analysis unless the teacher made an adaptation of breaking down the steps even further and then these would be placed on the data sheet. (In this data sheet, it should be noted that the first step is on the bottom row. Steps are traditionally placed in descending order so if the teacher decides to graph the data, progress will be depicted going in an upwards direction). In the second column, the teacher writes in the caution steps and time-limited steps that were identified in the discrepancy analysis. The rest of the columns (except for the last column) is where the teacher writes the date, teaches the student each step of the procedure using the system of least prompts, and records the prompt that was used (as specified in the key). The last column is used to make any comments about any errors the student continues to make or any adaptations or changes to instruction. Constant evaluation of the student's progress is necessary to determine if further changes need to be made (e.g., change the reinforcer, use a different instructional strategy, change the task analysis into smaller steps, or change the adaptations). Teachers play a critical role in effectively teaching, evaluating, and modifying instruction to maximize students learning.

SUMMARY

Over the past several years, there have been increasing numbers of children with complex health care needs and the numbers are likely to continue to rise (Hewitt-Taylor, 2010). Teachers need to be prepared to manage these children's health care procedures. In some cases this may entail monitoring the student for certain problems and responding to them. Some teachers may be given the task of actually performing the student's health care procedure. When this is the case, it is important that the teacher understand what this entails and has the proper training by a registered nurse. Periodic supervision and having someone to contact when questions arise is crucial.

An IHP that includes the section on "Action Plans for School Personnel" has been thought to be beneficial to teachers according to teachers and nurses alike (Heller & Tumlin, 2004). This additional section provides information

on what to monitor, specialized information about the health care procedure (including written procedure), and common problems that could occur with specific actions to take. Although the nurse is ultimately responsible for the IHP, team input is critical. If the nurse does not routinely write IHPs, teachers may request the formation of an “Action Plans for School Personnel.” The important information will assist them should a problem arise.

Although nurses have knowledge and skills regarding teaching health care procedures, they lack expertise in instruction when the student has an intellectual disability, learning disability, processing disorders, visual/hearing impairments, orthopedic impairments or other types of disability that affects learning or requires adaptations to promote learning. Teachers, with their arsenal of instructional strategies and adaptations, are in the unique position to help students learn to perform, or partially participate in the performance of, their own health care procedure. This can increase students’ independence and decrease learned helplessness.

Children who have complex health care needs are first and foremost children who have the same rights and needs as their peers (Hewitt-Taylor, 2010). Therefore, it is important for teachers not to lose sight of the child regardless of what tubes or machines the child may have connected. Instead, teachers need to maintain a safe, healthy environment for these (and all) children as they use their expertise in instruction to help foster independence in the performance of their health care procedures.

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