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Adult Learner Considerations in Training Unlicensed Assistive Personnel as a Strategy to
Decrease Medication Errors in Schools

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Abstract

This scholarly project examines the reported incidence of medication errors in schools and the associated impact on students. Factors described in the literature that contribute to those medication errors include the use of unlicensed assistive personnel (UAP) and minimal or no training of the UAP. Consideration of adult learning needs may lead to more effective learning and therefore behaviors by the UAP that would decrease medication errors in schools, resulting in increasing student safety and academic achievement. Recommendations are made to use evidence-based learning strategies for adult learning to result in effective psychomotor training and cognitive and affective domain education for the UAP who are delegated to perform medication administration in the schools.

Keywords: school nurse, medication, unlicensed assistive personnel, adult learning

Using Adult Learner Considerations in Training Unlicensed Assistive Personnel as a Strategy to
Decrease Medication Errors in Schools

Student achievement and safety of students in schools is currently subject to scrutiny on the federal, state, and local level. Much has been written in the popular press regarding the safety of children in schools as well as the perceived decline of achievement by students. Behind the headlines is a problem, the medication errors that occur in schools, that pertains to the safety of children and their academic achievement. Medication errors in schools garnered attention in the school nurse community several years ago, but are getting virtually no notice now. In the absence of a radical improvement that occurred without fanfare, the incidence of medication errors affects children every day. This scholarly project will examine the literature regarding the reported incidence of medication errors in schools and some of the factors described that contribute to those medication errors. Educational strategies from adult learning research are described that should inform the cognitive, psychomotor and affective training given to the unlicensed assistive personnel (UAP) who are delegated to perform medication administration in the schools. This may be a means to reduce medication errors and increase student safety and academic achievement. Recommendations to accommodate the learning needs of adults as well as directing future efforts will be presented.

Medications in Schools

Students receive medications in school for a wide variety of medical conditions. An average of 5.6 percent of students receive medication at school, with medications for attention deficit hyperactivity disorder (ADHD) being administered to 3.3 percent of the students (McCarthy, Kelly, & Reed, 2000). Medications administered in school to treat ADHD have decreased (DuPont, Bucher, Wilford, & Coleman, 2007), but concurrent with medication

administration for ADHD decreasing, an increase of other medications including psychiatric, seizure and non-prescription medications has resulted in an increase in the complexity of medication administration (McCarthy, Kelly, Johnson, Roman, & Zimmerman, 2006, pp. 105-106).

Medication Errors

Medication errors are those instances where there has been a breach of the “six rights” of medication administration or missing a dose. Well known to nurses, those six rights are right person, right medication, right dose, right time, right route, and right documentation. Iowa school principals reported the rate of medication errors in schools to range from occurring 3 or more times a month (24.3 percent of respondents) to 1 to 2 times per month by 36.1 percent of respondents (Farris, McCarthy, Kelly, Clay, & Gross, 2003). Students and parents reporting on their personal experiences regarding medication administration in school indicate that of students with attention deficit hyperactivity disorder, 12.1 percent miss their medication once per week, and 27.2 percent miss their medication from once per month to less than once per week (Clay, Farris, McCarthy, Kelly, & Howarth, 2008). Nearly half (48.5 percent) of school nurses in a nationwide survey reported that a medication error had occurred in their building (McCarthy et al., 2000). Overall, a comparison of 10 studies found that “medication errors [in schools] were commonly found” (Canham et al., 2007, p. 22). McCarthy et al. (2006) report that the types of medication errors that occur most commonly (79.7 percent) are missed doses and late doses, but additional types described by Farris et al. (2003) include medications administered but not documented, medications administered without authorization, student being given wrong medication, and student receiving extra doses.

Effect of Medication Errors

Medication errors of missed doses and late doses jeopardize patients and have an adverse impact. The effects of missing medications are reported by Clay et al. (2008). Students and parents reported that the effect on the student's physical health includes breathing problems, gastrointestinal problems (nausea, vomiting, and stomach cramps), headaches, feeling anxious, feeling confused, and unable to concentrate. The students report that the effect on their school experience includes trouble paying attention, misbehaving in class, and doing poorly on exams. McCarthy et al. (2000) allude to the complexity of medication administration and the inevitability of errors, but conclude that medication errors affect the safety of students and are not acceptable. (pp. 375-376).

Medication Administration

Nurses are socialized, justifiably, to dread medication errors of all kinds and errors have the affective impact on a nurse of feeling like a personal failing. However, school nurses are not typically doing medication administration in schools. McCarthy et al. (2000) found that only 24.3 percent of school nurses administer the medications in their schools. For some school nurses, the responsibility of having multiple school buildings in their assignment preclude being available for medication administration. McCarthy et al. (2000) also found that 58.6 percent of school nurse respondents were responsible for two or more school buildings, with over 26 percent responsible for four or more schools. The National Association of School Nurses (NASN) recommends a minimum ratio of 1 school nurse to 750 general population students (2011, p. 9). The school nurses surveyed by McCarthy et al. (2000) reported that the number of children cared for by an individual nurse ranged from 501-1000 by 34.4 percent of nurses to 1001->2500 students by 49.2 percent of school nurses. The context of school systems viewing

health services as not their primary mission, as well as decreasing school budgets, are cited as factors that contribute to falling short of the ideal that school nurses administer all prescription medication in schools (Price, Dake, Murnan, & Telljohann, 2003, p. 373).

For certain circumstances, with the approval of the school nurse, students can self administer medications. Asthma medications, particularly inhalers, for example are commonly allowed to be self-administered. School systems, at a rate of 76.3 percent, were found by McCarthy et al. (2000) to allow children to self-medicate, although frequently under the supervision of an adult. Specifically, children in the upper grades of middle school/junior high and high school were allowed (73.1 and 78.8 percent respectively) by their school systems to self administer medications, including insulin and other medications.

Unlicensed Assistive Personnel

For a large majority (75.6 percent) of the school nurses who participated in the nationwide study by McCarthy et al. (2000), medications are administered in the school by unlicensed assistive personnel (UAP). A UAP is defined to be "A person who has been delegated certain appropriate, routine, standardized nursing tasks by a registered nurse..." (NASN, 2011, p. 78). The job titles of UAP to whom medication administration in schools is delegated to include secretaries, health aides, and teachers (Farris et al., 2003), and parents, students and "other" also act as UAP (McCarthy et al., 2000).

One researcher's observation of the school secretary at work describes someone who may be helping a parent, addressing a teacher's questions, and administering medication to a student all at once (Canham et al., 2007, pp. 21-22). Yet, despite their divided attention, the individuals who compose the majority of UAP are school secretaries. The prevalence of school secretaries as UAP were found to be 38 percent, 35 percent, 66.2 percent, and 64 percent, by Farris et al.

(2003), Ficca and Welk (2006), McCarthy et al. (2000), and Price et al. (2003) respectively. The opinions of school secretaries regarding their administration of medication to students were analyzed using a seven-point Likert-type scale. Secretaries were found to not welcome the responsibility of administering medications (Price et al., 2003, p. 376). Their responses regarding medication administration include 50 percent of secretaries being concerned that they might get blamed if a problem arises, 42 percent report that they do not have sufficient time, 37 percent are concerned that they might make a mistake, 26 percent were concerned that a student might have a bad reaction to medication, 10 percent were concerned about the legal liability, not comfortable doing this, should be the nurse's job, or not being trained. Just 17 percent had no concerns (p. 377).

By the definition of the role of UAP, the individuals administering medications in schools must be trained. The literature found on this subject indicates that the training that UAP receive ranges from no training to an 80 hour course. The 80 hour course described by Gursky and Ryser (2007) appears to be an anomaly in the literature pertaining to UAP training. In the one district (190,000 students) where a published account describes training of this magnitude having been created and implemented, health aides and health assistants are trained in 7 broad content areas and 37 topics of study.

The more typical length of training is reported to vary from no training at 73 percent of sample schools (Ficca & Welk, 2006, p. 153) to less than one hour at 28 percent of sample schools (Price et al., 2003 p. 376), to two hours or less in length at 58.4 percent of sample schools (McCarthy et al., 2000, p. 374). Table 1 shows descriptions of medication administration training for UAP from published studies that include the following topics and percentages of respondents reporting the content was included in training.

Table 1

Content of Training for Unlicensed Assistive Personnel

Content	Study and Percent Reporting Content in Training		
	Ficca & Welk, (2006)	Price et al., (2003)	McCarthy et al., (2000)
<u>Cognitive</u>			
Use of emergency medications	22		76.3
General purpose of medications	17		78.2
Use of resources	10		
Information on oral, topical, and inhalant medications			87.6
Role differentiation	7		
<u>Psychomotor</u>			
Documentation	19	65	
Administration procedures	17	67	
Making sure correct student gets correct medication		67	
Correctly storing student medication		61	
Correctly handling medication errors		39	
<u>Cognitive and Psychomotor</u>			
Emergency procedures	20		

<u>Other</u>		5	
<u>No training</u>	73	26	23.1

The deplorable condition of “no training” is self-evidently wrong by any measure. For those respondents who report training, the content areas listed in the table include matter from the expected and necessary cognitive (knowledge) and psychomotor (skills) domains of learning. Missing is any mention of intentional affective (attitudes) domain teaching. The 80 hour course described by Gursky and Ryser (2007) includes content regarding ethics, but the scope and depth of this content was not described.

Of particular interest are the findings by McCarthy et al. (2000), which is that among those school nurses who report using a UAP for medication administration, the probability of a medication error is 3.1 times more likely than if a school nurse is administering medications (p. 375). McCarthy et al. (2000) caution against assuming the UAP are poorly trained, citing possible confounding factors such as high student ratio, or a highly efficient error reporting system. But what is poor training, and what is effective training? Can addressing the needs of the adult learner in training UAP be a means to decrease medication errors in schools?

School Nurse Role

For the specialty practice of school nursing, NASN is the professional organization that represents all school nurses. NASN, in publications describing school nursing’s shared values, is the collective voice through which the evolving scope and standards of practice of school nurses are communicated to stakeholders. The specific standards and competencies of school nursing that pertain to the role and definition of the UAP, training, and quality improvement are as follows.

The school nursing scope and standards of practice glossary entry (definition) for “unlicensed assistive personnel” describes the role in depth. The description stipulates that the registered nurse may choose to not delegate to an individual based on “competency or ability” (NASN, 2011, p. 78). “Competency” and “ability” are defined by Webster (1983) as “capacity equal to requirement, adequate fitness or ability...” (p. 370) and “power to do (something physical or mental)...(p. 4), respectively.

Also from the school nursing scope and standards of practice, Standard 17 Program Management, states, “The school nurse manages school health services.” One competency within that standard describes the role as being supervisory in nature, and specifically cites the orientation and training of the UAP (NASN, 2011, p. 70). School nurses were found to develop their own training for UAP in 63.9 percent of the sample by McCarthy et al (2000), and to do the teaching of the UAP by 85.1 percent of the sample (p. 374).

There is an expectation of quality improvement in the standards of practice, and Standard 10 Quality of Practice reads “The school nurse contributes to quality nursing practice” (p. 56). The competency relating to participating in quality improvement cites “Formulating recommendations to improve school nursing practice or outcomes”, and there is an additional competency that is expected for the graduate-level prepared school nurse under this standard, which is “Designs innovations to effect change in school nursing practice to improve health outcomes” (pp. 56-57). Based on the most current scope and standards of practice, the school nurse has an obligation to train UAP as well as to improve the quality of training if possible.

The school nurse role regarding medication administration varies by each state’s Nurse Practice Act or the equivalent. It is essential that each school nurse understands what the law allows and to whom medication administration may be delegated. Considerable confusion and

misinformation on this point was found by Farris et al. (2003), Ficca and Welk (2006), & Price et al. (2003). The Nurse Practice Act of the state where the delegation will occur must guide and inform the design of the training. In addition, the policy and procedures of the individual school district(s) must be consulted and followed.

Training the UAP

Given the limited time, resources, and funding available for and devoted to training UAP, the best practice must be to strive for training to be as effective as possible. The training must have the desired effect of empowering the UAP with the knowledge, skills, and attitude needed to administer medications to students without medication errors. To facilitate improved training, it should be informed by the work of researchers in the field of adult learning. The work of Price et al. (2003) with school secretaries has identified that anxiety may be a factor in the role of the UAP. The school nurse can address this anxiety by helping the UAP view the school nurse as a support, through improved training. Although verbalizations of support are valuable, tangible support in the form of the school nurse having facilitated effective learning remains when the school nurse is at a different building.

The Adult Learner

Knowles, Holton and Swanson (2005) describe six important characteristics (p. 4) in understanding the needs of the adult learner. All six of the characteristics need to be considered, and the school nurse will need to decide which are most applicable to the task of training the adult learner UAP in a particular setting and situation.

Need to know. Before an adult will endeavor to learn something, that adult must first know why it is important to learn that thing. The written pretest is well suited for that purpose, as well as to determine the learning needs of that learner. A standardized, validated instrument

for determining the learning needs of a UAP administering medications in schools has not been found. There are many variables encountered in school-based medication administration.

However, for the purpose of engaging the adult learner and helping a learner see their own learning needs, the pretest in this situation may be a composite of items drawn from instruments designed for diabetes education, ADHD medication knowledge, and the management of asthma in children.

Self-concept. An adult's self-concept as a learner (independent and self-directed) must be supported by the clear message that they are making decisions for which they will be held responsible. These decisions about the medication administration plan include how the UAP may choose to keep track of the daily procedures schedule. One option is using a paper list of those events with checkboxes and times. Or, the UAP may have a personal smart phone as a constant companion and will best be able to use a smart phone app to keep track of the daily procedures. If the UAP is comfortable with digital technology, collaborating on programming a smart phone or timer to trigger alerts and alarms may result in an effective series of reminders through the day.

Prior Experience. Because adult learners bring all of their life experiences to the task of being a UAP, they will have their own learning styles and preferences. Individualization of strategies is effective. Some examples of individualization include determining how the UAP likes to organize and learn: visually (by symbols and colors), reading and/or writing, by doing and manipulating, or by sound cues and listening, and adapting the training with those preferences in mind. Some specific examples may include helping to color-code containers based on administration times or helping the UAP create a spatial organization of medications to be administered based on time of administration. To facilitate learning of the reading and

writing-oriented tasks, create a set of model documents for training purposes regarding the expected way of documenting medical administration.

Readiness to Learn. Adults learn in order to address their real-life situations. In terms of describing medication dosing to the UAP, explaining that a particular student's medicine is wearing off by noon is easily understood. However, the UAP may not realize, and it should be emphasized, that if the student does not get the midday dose at the right time, the student will experience significant effects from missing that medication. This can include problems like being unable to concentrate, missing content or class discussion, and likely not be able to learn anything for the rest of the day.

Orientation to Learning. The adult learner often brings a rich and deep life of experiences and solving problems. In the role of UAP as a problem solver, the adult learner will benefit from being shown the challenges inherent in medication administration, being encouraged while creating a solution, and then collaborating with the school nurse to ensure safety and reliability in the plan.

Motivation to Learn. As shown in Table 1, school nurses are documented to provide psychomotor skill instruction and cognitive domain content in training UAP (Ficca & Welk, 2006, McCarthy et al., 2000), and Price et al., 2003). Not documented in these studies is education in the affective domain. The affective domain includes "attitudes, beliefs and values, and feelings and emotions" (Scheckel, 2009, p.164). School nurses (and all nurses) develop learning in the affective domain because of the culture of caring that surrounds (and is) nursing. Van Valkenburg and Holden (2004) describe a person's value system as being similar to an onion's layers. At the deepest level is the person's core value system. They assert that only life experience and education can change core values (p. 348). The most outward layer is behavior.

The advocacy for patients that nurses engage in every day as mandated in the American Nurses Association Code of Ethics for Nurses, Provision 3 (2001), manifested by the behavior of caring, is developed from education in the affective domain. This caring, the internal motivation to perform the difficult task of medication administration in a school, may be the primary key to decreasing medication errors in schools.

Although Van Valkenburg and Holden (2004) have expressed that values learning in health care is more commonly “caught, not taught” (p. 348), there are teaching methods to promote learning in the affective domain. Silver describes (as cited in Glen, 1999, p. 209) six approaches to values teaching. They are values clarification; values inculcation; moral reasoning and cognitive moral development; values analysis; role playing for social values; and action learning. Neumann and Forsyth (2008) give descriptions to several exercises that may be particularly applicable in the school setting for teaching values to UAP, including determining what values a person brings to the profession (for values clarification), thinking and acting as a different person to investigate another’s viewpoint (i.e., role playing for social values), and thinking about right and wrong actions (for moral reasoning and cognitive moral development), (p. 249). Additional possibilities include novel learning activities such as opportunities for the UAP to know the students they are medicating as persons with a history and a future (Litarowsky, Murphy, & Canham, 2004).

Learning and Evaluation

Having determined from the medication administration needs of the particular building what problems the UAP needs to solve, the school nurse must now engage the UAP in the training, followed by evaluation of whether the UAP has mastered the mandatory content and skills. Being prepared with the right visual and tactual aids is important to problem-based

learning. One highly-regarded technique to organize a task is a checklist. Collaborating on a checklist of training needs serves several important functions. It ensures that you do not forget or overlook anything. With a checklist, you can demonstrate the progress that is being made. A copy can be left with the UAP to allow review about what has been covered, and a reminder of additional sessions needed if anything has not been covered. The checklist should be customized as to the needs of the site and, as needs change, the checklist can be expanded with an addendum. Although the school nurse may be tempted to structure this checklist like a nursing skills lab competency check off, be mindful of the language that the UAP will be most comfortable with. Avoid esoteric or highly technical language, and find substitutes that plainly and clearly communicate the concept or skill.

For all training, a short session or series of sessions early in the day before the UAP's other tasks of the day pull at their attention may be more productive than a continuous block of time that is constantly interrupted. Also, allocating the content over smaller sessions in distributed practice supports an improvement of retention of the content of up to 67 percent (Bastable & Doody, 2008, p. 397).

For psychomotor skills, the standard procedure in training is demonstration/return demonstration. For example, Epi-Pen brand epinephrine auto injectors are supplied with a trainer in the consumer package. Likewise, glucagon injection (if your state Nurse Practice Act governing medication delegation allows glucagon injection to be delegated) trainers are available. The simplest trainers allow the simulation of mixing, drawing up the contained inert powder medication into a blunt-needled "syringe" and the UAP can then demonstrate the correct site selection and imitate the injection technique. Also available is a high fidelity version that

allows liquid to be mixed with powder in a very realistic simulation and then injected into an inert resilient cushion.

More problematic are the asthma medications that are administered using pressurized inhalers. Because of the competing products (like the many different holding chambers) on the market, and the after-administration cares (rinsing and spitting after inhaled controller medication administration), consider prioritizing the training to emphasize the youngest and/or most vulnerable students. For inhaled medication, inert trainers are available to demonstrate the technique needed for the student to be administered the prescribed amount. If no inert trainer is available, describing and demonstrating the motion to activate is easily imitated. Form a thumb and forefinger into the shape of a capital “L”, and demonstrate activation by flexing the forefinger. The variety of holding chambers and spacers should be shown, as well as the inhalation methods of re-breather technique (activate the pressurized inhaler into the spacer and count five breaths in and out while the student holds the mask over nose and mouth) for very young students. The “activate-inhale-and-hold-for-ten-seconds” technique is indicated for a student who is a little older who brings a spacer and inhaler. For students without a spacer, one district teaches the “hold the inhaler 2 fingers distance away, begin the inhale and then activate while continuing to inhale deeply” technique. For the students who have no spacer, follow the user instructions on the medication’s package insert to increase the probability that they are administered the prescribed dose.

For oral and rectal medication, a pantomime of the actions using the actual containers may be sufficient to demonstrate the skill. Include the usual nursing actions that ensure that the oral medication is properly administered, including examining the inside of the mouth (with a flashlight if necessary), or informing the student that rinsing with water and spitting into a sink

will be expected to help ensure that the medication has not been “stashed” under the tongue or in the cheek.

For evaluation of cognitive content, begin by engaging in a series of non-threatening questions including “Let’s do a little problem solving. What would you do if…” scenarios. Escalating the acuity of the situation’s questions can lead to getting the UAP to consider what the proper response in emergency situations is. Consider accepting the answers “Call 911”, “Get help” and “Call the school nurse” as legitimate first answers, and then probe for the next thing they should do. The learning needs thus revealed will help direct further instruction.

Evaluation of affective learning is problematic, because attitudes and values are difficult to measure on an objective scale. Many instruments have been developed for quantifying caring in nurses, but none for UAP has been found, the difference being the intensity of caring expected from the nurse. Self-reporting a desire to administer medications in spite of obstacles, or a posttest with similar sentiments may be a means to evaluate the learning that has occurred. Possibly the best means of evaluating learning in the affective domain is by a set of simple Likert scales completed by the UAP and the students to whom medication is administered. This would help triangulate the observed behavior of the UAP in actions reflecting caring about the students and attentiveness to their medication administration needs with their self reports of performance in that role.

Summary

The school nurses who must use UAP because of budgets and decisions made by school districts take on great responsibilities in providing for safe medication administration and for the training of those who do it. School nurses will need to observe the requirements of medication delegation training dictated in the state Nurse Practice and as set by policy and procedure within

their district when developing this training. School nurses also must be mindful of the school nursing Scope and Standards of Practice. Improvements may be made by incorporating elements of adult learning principles into the mandated training for UAP. In furtherance of decreasing medication administration errors, four recommendations are offered here.

Recommendation 1

School nurses must advocate for an increased presence in the schools of their students. Ideally, a nurse is present in a school every day. If academic success is the central mission of schools, then ensuring that the health needs of students are met at school is a necessary component of that mission. Lower student –to-nurse ratios decrease health barriers to a better academic outcome for every student, especially for those who require medication administration at school. This advocacy is needed at every level: school, school district, state, and federal. Each individual nurse’s voice and story must advocate for the health of the students.

Recommendation 2

Train all UAP to administer medications. It is difficult to envision an untrained person entrusted with medication administration to children as being an intentional act. Clearly, those schools where UAP report no training are, if it is true, unsafe for students, and this situation, if it still exists, is inexcusable. An absolute minimum of training in an uncomplicated medication administration situation may be just teaching the six rights, but that covers a great deal in terms of safety. Ideally, the school nurse would make the assessment of what is required for the situation, and plan the training accordingly. Consider including all three learning domains in the teaching plan.

Recommendation 3

Increase the capacity of school nurses to teach using adult learner considerations in all learning domains. The elements of training UAP appear in the preceding paragraphs, but one

strategy may be to reach out to school nurses with easily accessible lesson plans for incorporating all domains content into teaching UAP. The lesson plans may be easily distributed via the Internet, via professional organizations such as the National Association of Schools Nurses and the state affiliates, or by requesting distribution within the school nurse supply catalogs sent to schools nationwide.

Recommendation 4

The concept of using adult learner characteristics for training UAP in medication administration has face validity, but research is needed. Evidence-based practice mandates a need to determine whether an intervention has a statistically significant effect in the rate of medication errors in schools. A randomized controlled trial study would be possible in a district with enough schools utilizing UAP for the majority of medication administration. A longitudinal study with data collected after instituting adult learner centered methods of teaching may be achievable in a school district with a smaller potential sample of schools utilizing UAP for the majority of medication administration. One limitation on such a study is that because information surrounding medication errors is sensitive, it may be difficult to collect accurate information.

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