



# THE JOURNAL

of the New York State Nurses Association

FALL/WINTER 2007/08

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- Implementing technology to improve medication safety in healthcare facilities: A literature review  
*by Unn Hidle, MS, MEd, CRN, CPNP*
- Nurses' attitudes about end-of-life referrals  
*by Roberta Rolland, MS, RN, FNP and Melanie Kalman, PhD, CNS*
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## ■ EDITORIAL

### Consider all options

The papers in this issue of the *Journal of the New York State Nurses Association* gesture toward the spectrum of choices that professional nurses are presented with today.

As RNs, we make an increasing number of professional and clinical decisions. By examining and considering the application of ideas from multiple perspectives, such as those presented here, we can be sure that we are basing these important decisions on evidence and providing the best care possible. Staying aware of choices in nursing practice also alerts RNs to needed shifts in attitudes and opportunities to conduct new research, two important steps to improving the future of nursing.

The use of computer technology to promote medication safety is quickly becoming a standard in today's practice. Computers offer an important and promising adjunct to RN expertise and intellectual tools such as what are now often referred to as the "seven rights of medication administration" (Agin, 2007). Like any new technology, however, computerized medication safety systems have the potential to create impediments. According to Hidle, nursing feedback is crucial to ensuring that any implemented safety systems are user-friendly and appropriate for the practice setting.

End-of-life care, as discussed by Rolland and Kalman, is prevalent today and nursing plays a leading role in arranging for and delivering such care. Hospice referral is negatively impacted by nurses' and other healthcare professionals' behaviors and attitudes regarding end of life. The research presented here points to practitioner-patient communication breakdowns that result in delayed referral and an unfortunate underutilization of hospice care. In conjunction with the End-of-Life Nursing Education Consortium (ELNEC), the authors call for expanded nursing education regarding end-of-life and palliative care as a means toward improving attitudes toward hospice.

In their review of the literature, Athilingam and King discuss the current lack of options for implementing cognitive screening for people with heart failure. Despite the high prevalence of cognitive impairment in this population, such screening is not routinely performed due to lack of a simple tool combined with a misconception about what constitutes normal aging. Through exploring the potential patient benefits of screening, the authors deliver the message that future research is the path that will lead RNs to increased holistic care measures for heart failure patients.

In this issue, you will also notice "What's new in the healthcare literature," presenting brief reviews of research relevant to RNs. It is our hope that you find these abstracts thought-provoking and informative.

Finally, please note that the Editorial Board is seeking new manuscripts for publication consideration for the Spring/Summer 2008 issue. The board will provide timely reviews and seeks to assist authors (both novice and experienced) by providing editorial suggestions to improve and strengthen manuscripts. For submission deadlines and guidelines, contact the NYSNA Communications Department at [communications@nysna.org](mailto:communications@nysna.org) or go to the publications area of [www.nysna.org](http://www.nysna.org).

Ann Gothler, PhD, RN  
Peggy Jenkins, MS, RN  
Guest editors

### REFERENCE

Agins, A. (2007). *Pharmacology principles*. Philadelphia: Mosby.



## Implementing technology to improve medication safety in healthcare facilities: A literature review

Unn Hidle, MS, MEd, CRN, CPNP

### Abstract

Medication errors remain one of the most common causes of patient injuries in the United States, with detrimental outcomes including adverse reactions and even death. By developing a better understanding of why and how medication errors occur, preventative measures may be implemented including technological advances. In this literature review, potential methods of reducing medication errors were explored. Furthermore, technology tools available for medication orders and administration are described, including advantages and disadvantages of each system. It was found that technology can be an excellent aid in improving safety of medication administration. However, computer technology cannot replace human intellect and intuition. Nurses should be involved when implementing any new computerized system in order to obtain the most appropriate and user-friendly structure.

Medication errors are one of the most common but preventable causes of iatrogenic injuries in the United States. The Institute of Medicine report *To Err is Human: Building a Safer Health System* estimated that between 44,000 and 98,000 people die each year from medication errors (Kohn, Corrigan, & Donaldson, 2000). Outcomes of medication errors, including adverse reactions, may result in prolonged hospital stay with increased cost, patient disability, and even death (Kozier, Berkovitch, & Koren, 2006; Stetina, Groves, & Pafford, 2005). In Indianapolis, in 2006, two

infants died and three were in critical condition after they were given overdoses of heparin ("Hospital changes procedures," 2006). The wrong concentration of heparin was stocked in the computerized drug administration system by an experienced pharmacy technician. Because heparin vials with different concentrations had similar packaging, the nurse retrieved the vial with a higher concentration and accidentally administered the lethal doses ("Hospital changes procedure," 2006). Similarly, in November 2006 a nurse in Wisconsin was prosecuted

for administering a bag of epidural analgesia instead of the ordered penicillin (Holt, 2006). The prosecutors claimed the nurse failed to adhere to the five rights of medication administration (Table 1), which are considered crucial in reducing medication errors (Kozier, Erb, Berman, & Snyder, 2004; Lefrak, 2002). Additionally, the nurse was charged with neglecting to use the bedside barcode system in order to properly identify the patient and medication. She faced up to 6 years in prison for criminal neglect resulting in bodily harm (Holt, 2006).

Medication errors kill one person every day in the United States and contribute to multiple additional injuries (Menachemi & Brooks, 2006). Such errors are on the rise and, according to the MEDMARX voluntary medication error tracking system, there were close to 200,000 medication errors reported in 2002. The number of errors is estimated to be much higher, but many go unreported for fear of consequences (Lafleur, 2004).

With the implementation of computerized medication order and administration systems, many errors can be prevented (Rothschild, 2004). There are many technology systems currently available and the field of health information technology is growing rapidly. The importance of nurses' involvement in implementing computerized systems and appropriate training of personnel should be emphasized.

The purpose of this article is to describe the meaning of medication errors and explain reasons why medication errors are not appropriately reported. Furthermore, different technology tools available for medication orders and administration are reviewed, including advantages and disadvantages of each system. The overall goal is to explore how the healthcare field can make medication administration safer for patients and prevent the number of errors currently reported.

## Defining medication errors

Medication errors are preventable events that may result in serious harm to patients. More specifically, medication errors are defined as "error[s] in prescribing, dispensing, or administering a medication" (Kozler et al., 2006, p. 1156). Furthermore, "medication error includes any preventable event that may cause or lead to inappropriate prescribing, dispensing, or administering of a medication." (p. 1156). Tragically, these errors result in the deaths of thousands of patients each year, especially in the pediatric population (Walsh et al., 2006). In an effort to reduce these preventable errors, Congress introduced two bills, the Health Information and Quality Improvement Act of 2001 and the Medication Errors Reduction Act. In combination these bills awarded more than \$1 billion in grants for implementation of medication technology (Lafleur, 2004).

The types of medication errors are described by Kozler et al. (2006) as dosing errors including administration error, prescribing errors, and dispensing errors. An *administration error* happens when the wrong dose of medication is calculated and administered to patients (Papastrat & Wallace, 2003). Types of administration errors include tenfold errors, where the medication is calculated or transcribed to an amount 10 times higher than

the recommended dose by using the wrong unit. The outcomes of tenfold errors can be fatal (Grissinger & Globus, 2004). For example, an order that is written in micrograms but is transcribed or calculated in milligrams can lead to fatal results, as with the medication digoxin.

In the category of *prescribing errors*, there is a high incidence of mistakes with verbal orders (Grissinger & Globus, 2004). Verbal orders should be used minimally because they lead to a greater risk of errors due to misunderstandings, misinterpretation, and miswriting (Kaplan, Ancheta, Jacobs, & Clinical Informatics Outcomes Research Group, 2006).

Finally, the category of *dispensing errors* includes wrongly dispensed medication or medication dose from the pharmacy, or technical errors when medications are administered through automated dispensing systems (Grissinger & Globus, 2004).

Medication errors are more prevalent in pediatric patients, complex patients such as those who have underlying disease or are very sick, and patients receiving medications in ambulatory care settings. In pediatrics, medication dosing is often calculated by the patient's weight or body surface area (BSA), which makes this population more prone to medical calculation errors (King, Paice, Rangrej, Forestell, & Swartz, 2003). Patient groups also prone to medication errors include patients with underlying diseases such as impaired renal function requiring renal dosing or very sick patients in an intensive care setting. The treatment plans for these patients are complex with multiple medications and healthcare providers often have little time to carefully check medication dosages (Rothschild, 2004). Outpatient and ambulatory care settings show an increase in the amount of medication errors based on the lack of teaching regarding over-the-counter medications. Patients may believe these non-prescription medications are harmless both in terms of dosing and combining medications. Without proper education for patients on the appropriate use of these non-prescription medications, morbidity and even mortality may result (Curry, Walker, Hogstel, & Burns, 2005).

The experience level of healthcare providers and their working conditions may contribute to an increase or decrease in medication errors. Based on recent studies, Kozler et al. (2006)

**Table 1. The Five Rights of Medication Administration**

Five rights	Questions to ask
Right medication	Is the right medication ordered for the right patient?
Right dose	Is the medication dose accurate? In pediatrics, is the dose according to the patient's weight? How often is the medication dose administered?
Right time	What time is the medication to be administered? Should the medication be given before, during, or after a meal?
Right route	How is the medication administered? What route is correct for administration of the medication? Is the route of administration accurate according to the order?
Right patient	Was the right patient identified using appropriate institutional policy measures such as patient name, date of birth, and medical record number?

*Any system implemented in a healthcare setting should not overshadow the advanced knowledge of providers or decrease basic safety precautions.*

reported that the risk of medication errors was higher when the order was written by an inexperienced physician rather than a staff physician. Physicians, practitioners, and nurses with advanced experience were more likely to detect medication errors than trainees. A retrospective cohort study conducted by Kozer et al. (2002) showed that in an emergency department of a pediatric tertiary hospital, the risk of error was higher when the order was given by an inexperienced physician than by one with experience. Although medication errors occur at all levels, based on these studies it is reasonable to believe that more experienced providers will recognize the mistakes.

Furthermore, it was previously denied by the medical community that the amount of work hours had an effect on performance of healthcare workers (Kozer et al., 2006). However, recent studies show a strong correlation between the workload hours of healthcare providers and the number of medication errors. For example, in a study (Landrigan et al., 2004) correlating working hours in an intensive care unit with the number of serious medication errors, the number of errors was significantly reduced when the on-call hours in a shift for medical interns were decreased to 16 hours with the maximum weekly work hours reduced from 80 hours to 63 hours. Additionally, the type of shift worked also influenced the number of errors. Reducing the hours in a shift demonstrated a reduction in medication errors (King et al., 2003; Lockley et al., 2004).

Although nurses have expressed concern about the quality of care and increase in errors when working extended or night shifts, few studies have examined the relationship between work hours of nurses and patient safety. In a study by Scott, Rogers, Hwang & Zhang (2006) on the effects of nurses' work hours on vigilance and patients' safety, findings indicated that shifts greater than 12.5 consecutive hours almost doubled the risk for nurses making an error. Furthermore, the risk

of falling asleep and consequently having decreased alertness almost doubled when shifts exceeded 8 hours. These findings supported the Institute of Medicine recommendations to minimize the use of 12-hour shifts (Scott et al., 2006).<sup>1</sup>

The consequences of medication errors include diagnostic evaluations to evaluate organ function if toxic medication dosages are administered. Furthermore, treatments such as antidotes for the medication or even renal dialysis may be necessary. These interventions may prolong patients' hospitalizations and even result in death. Additionally, the cost of medication errors needs to be absorbed by patients, insurance companies, the healthcare system, and taxpayers (Kozer et al., 2006).

### Reporting medication errors

Ideally, voluntary reporting of medication errors should be expected from ethical, professional nurses, but for various reasons there is a lack of error reporting. Nurses may neglect to report medication errors in fear of being penalized and possibly losing their jobs (Lafleur, 2004). As a result, many errors go unreported and accurate statistical data are lacking (Kozer et al., 2006). A qualitative study by Stetina et al., (2005) confirmed these assumptions. In their study on how to manage medication error outcomes, nurses were found to be reluctant to report medication errors for fear of the consequences. Surprisingly, several of the nurses lacked knowledge of what qualified as a medication error and also when to report these mistakes. For example, the administration of a medication outside the given time limit according to hospital policy was not considered an error by the nurses. According to Kozer et al., (2006) one solution is to implement a surveillance system including chart review, incidence reports, and direct observation.

In an attempt to resolve the blame issue and improve the reporting of medication errors, a non-punitive and open approach with an emphasis on organizational learning is indicated as likely to facilitate reporting (Dickens, 2007).

In a study investigating methods to detect medication errors, Dickens found that hospital units with a healthy attitude and openness towards error reporting also had a higher frequency of reported errors. Instead of attempting to hide a mistake, nurses took appropriate steps in medication error reporting (Dickens, 2007). Rather than blaming the individual, the entire healthcare system needs to be evaluated in order to make improvements and prevent similar medication errors from occurring (Papastrat & Wallace, 2003).

### Technology tools

A variety of technologies can be implemented to reduce medication errors. Some of the methods used in healthcare settings to reduce medication errors and improve efficiency include the computerized physician order-entry system (CPOE), electronic medication administration record (eMAR), handheld computers, bar coding systems, automated decision support, and automated dispensing cabinets (ADCs) (Galanter, Didomenico, & Polikaitis, 2005; Grissinger & Globus, 2004; Kaplan, et al, 2006; Lafleur, 2004; McRoberts, 2005; Rothschild, 2004). Any technology used in healthcare settings should be considered as additional safety precautions. Additionally, any system implemented in a healthcare setting should not overshadow the advanced knowledge of providers or decrease basic safety precautions. Technologies, including medication administration systems, are not foolproof. Basic safety precautions such as the five medication checks can help in reducing errors (Lafleur, 2004).

### Computerized physician order-entry (CPOE)

CPOE is a computer software program designed to reduce the number of medication errors and increase efficiency (Rothschild, 2004). Some believe that the acronym CPOE should stand for computerized provider order entry, to acknowledge that clinicians such as NPs and PAs, in addition to physicians, make

<sup>1</sup> Nurses continue to debate the perceived benefits of minimizing 12-hour shifts versus their value for recruitment and retention.

medical orders. The system may improve communication and decision making within the multidisciplinary healthcare team and, as a result, could enhance overall patient outcomes. With the use of CPOE, orders are written directly into the computer and transferred to the pharmacy where they are reviewed. With appropriate input of patient characteristics, including weight, allergy status, and conditions altering the care plan such as impaired renal function, medication dosage calculations are performed by the software. In cases where the medical dosage is manually changed, the CPOE alerts the ordering physician of the patient's status affecting the medication adjustment (Rothschild, 2004).

#### **Electronic medication administration record (eMAR)**

The eMAR is usually a subsystem of the CPOE. It is a software program limited to medication orders that are transcribed prior to medication administration (Kaplan et al., 2006). The eMAR has been especially successful in reducing medication errors related to verbal orders. In addition to following standard protocol for verbal orders, including repeating back the order to the physician for confirmation and providing accurate identification of the prescriber and the patient, the order is immediately transcribed into the eMAR system. In a study by Kaplan et al., (2006), this process was shown to reduce the number of medication errors by 34%.

#### **Bar coding systems**

Bar codes from medications and vaccines have been used for several years after implementation by the federal Food and Drug Administration for safety reasons. For example, an adverse reaction to a measles, mumps, and rubella vaccine was easily tracked by bar code. The newer and more advanced use of bar codes is in the form of scanning. The bar-code scanning technology involves a hand-held scanner used at the bedside to confirm the five rights of medication administration. According to Lafleur (2004), the use of bar codes in medication administration can reduce errors significantly, in some studies by more than 20%. However, it is emphasized that the success of any bar-code scanning system depends on the amount of user training with the device.

#### **Automated clinical decision support (CDS)**

The automated clinical decision support system is another software program implemented with the goal of reducing medication errors. The software program makes suggestions in the course of care when patient data are entered into the system. In a study by Galanter et al. (2005), CDS was implemented on a unit in hope of reducing administration of medications contraindicated for patients with renal insufficiency. Although the implementation of a CDS system greatly reduced the administration of contraindicated medications, it was observed that healthcare providers were noncompliant with alert recommendations.

#### **Automated dispensing cabinets (ADC)**

The ADC consists of an automated dispensing system with stock medications in patient-care areas rather than the traditional unit-dose

dispensing system. In addition to reducing medication errors by dispensing the correct medication to be administered, the ADC is also cost beneficial in streamlining drug distribution and tracking drug charges. Close to 60% of hospitals in the United States now use the ADC system (Grissinger & Globus, 2004; Lafleur, 2004)

### **Positive findings**

There are multiple studies that have shown positive findings in reducing medication errors with implementation of computerized systems. In a study by King et al. (2003) the implementation of CPOE was found to decrease medication errors by 40% in areas where it was implemented as compared to units using hand-written orders. However, one limitation to the study was that medication errors in the hand-written order group were based on incidence reports of medication errors. Since many medication errors are suspected to go unreported, the numbers may be higher than what was reported in the study. CPOE reduced medication errors by eliminating illegible handwriting and

decreased errors associated with similar drug names. Because the computer calculates the medication dose, a decrease in errors was observed especially in high-risk areas such as pediatrics. Additionally, due to warnings of conditions such as renal or cardiac functions warranting dosage adjustments, certain medication errors were greatly reduced. For example, creatinine clearance values were entered into the system and dosage calculations were adjusted accordingly. Similarly, drug-to-drug interaction and the patient's allergy status were flagged by the system. Menachemi and Brooks (2006) also found similar benefits to implementing a CPOE system. Dosing guidelines were followed more closely, which added to the reduction in errors. Furthermore, there was greater clinician and patient satisfaction due to

improved productivity and workflows with the reduction of a paper-based process.

Besides the direct impact on patient safety in terms of reducing medication errors, CPOE has been found to be helpful in tracking typical errors or prescribing habits and therefore improving future safety. Healthcare providers also found the system helpful in improving communication among members of the multidisciplinary healthcare team and increasing the efficiency of healthcare delivery. Finally, CPOE improved the use of evidence-based clinical guidelines (Kozer et al., 2006; Rothschild, 2004).

In a study by Kaplan et al. (2006), the implementation of CPOE greatly reduced the number of verbal orders given by providers and accepted by nurses. In their study, the rate of verbal orders went from 23% to 10% before and after initiation of a CPOE system. However, the encouraging results were also due to the reinforcement of nurses not accepting verbal orders and education regarding the risks of making errors. The nurses were also actively involved in the enforcement of policies discouraging verbal orders at any time. Finally, Kozer et al. (2006) reported

Besides the direct impact on patient safety in terms of reducing medication errors, CPOE has been found to be helpful in tracking typical errors or prescribing habits and therefore improving future safety.

a drastic decrease in tenfold error when using a CPOE system. The computer makes the correct calculation but, more importantly, the software will not allow unaccepted abbreviations.

The automated CDS system has also been found to greatly decrease medication errors. In a study by Galanter et al. (2005), there was a 42% drop in serious errors related to specific dosing for underlying conditions.

## Negative findings

The negative findings of research studies were mostly technical in origin, but also included cost, limited selection of software, and reluctance to implement computerized systems from healthcare workers. In relation to the technology of the software, computerized medication ordering and administration systems are not flawless. One of the problems with a CPOE system is the danger of double dosing when there are different pathways in the system. In a pediatric study by Walsh et al. (2006), different medication errors in a CPOE system not usually seen in the traditional paper-ordering were detected. Some of these errors resulted from overriding alerts or warnings produced by the CPOE system. Sometimes the nurse would proceed in the ordering system without reading the alert. Additionally, standardized order sets created problems related to different pediatric age groups who varied in size. Kozer et al. (2006) found limitations with the CPOE system when the medications were required to be prepared immediately on the unit. Other disadvantages reported included the cost and limited choice of vendor offerings. Menachemi and Brooks (2006) suggested using internal systems rather than purchasing commercial CPOE technology in order to reduce the cost.

Finally, there is still resistance among certain healthcare employees to learn new technology. The key is to include nurses and nurse informatics in the process of implementing any new computer technology (Rothschild, 2004).

## Alternative methods

Since cost is a major factor in implementing new technology in any healthcare facility, it is important to evaluate the alternatives when a computerized system is not financially feasible. These include templates, color-coded standard dosing systems, pharmacy auditing, regulations, emphasis on education, and teamwork. Templates consist of standardized preprinted order sheets with specific patient information (Kozer et al., 2006). The color-coded system includes devices such as the Broselow Pediatric Emergency Tape, which implements color-coding of drug doses for children of different sizes and weights (Shah, Frush, Luo, & Wears, 2003). Careful pharmacy auditing, especially in high-risk areas such as

intensive care units, has been shown to decrease the incidence of medication errors considerably (Grissinger & Globus, 2004). Implementation of hospital regulations and policies for certain procedures and medications reduces the incidence of errors (Stumpf, 2007). For example, with certain drugs, two nurses are required to sign when the medication is administered. Implementation of strict regulations is beneficial in terms of safety related to working hours. Since fatigue has a strong correlation with medication errors, additional safety precautions are necessary (Scott et al., 2006). Finally, the number of educational hours allocated to prescribing and preventing of medication errors needs to be increased both in medical and nursing schools (Stetina et al., 2005). Open communication and teamwork among healthcare professionals are crucial in order to prevent medication errors and provide maximal patient safety (Kozer et al., 2006).

## Conclusions

Technology can be an excellent device in improving safety, but any system is only as good as its users. Computer technology cannot replace the human intellect and intuition. By relying too much on computerized systems, nurses may ignore simple, yet crucial safety steps such as the five rights. In terms of medication dosage calculations, most of the problems require only basic arithmetic skills. Without practice and daily use of these calculations, however, many physicians, practitioners, and nurses become incompetent in proper medical dosage calculations. Nurses need to question whether technology is used to support their own judgment or acts as the decision maker. An extreme example is the fatal heparin medication error mentioned in the introduction.

When implementing a new computerized system such as CPOE or eMAR, it is crucial that nurses be involved from the planning stage. By choosing a user-friendly system for nurses, efficiency and work satisfaction will likely improve. Additionally, a computerized system customized to the users' needs may increase their confidence in the use of technology. By incorporating these factors, the predicted outcome will be a reduction in the total number of medication errors.

By implementing a systems approach to medication errors, it is hoped that nurses will be less intimidated by and afraid of reporting medication errors. Without the direct blame for mistakes, nurses will likely report more errors, resulting in a realistic statistical picture of medication errors. As a result, a plan to prevent future mistakes can be developed. There is no doubt that medication safety is an ongoing challenge that cannot be changed overnight. Through the use of appropriate technology, education, training, and open communication, however, the benefits will outweigh the negative factors.

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## Nurses' attitudes about end-of-life referrals

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### Abstract

Changes in the causes of death and advances in medical technology are leading nurses today to become more involved with end-of-life care than previously. Yet, terminally ill patients and their families have reported dissatisfaction with end-of-life care. One reason for the dissatisfaction may be attitudes among nurses about end-of-life care and hospice referral. Attitudes about end of life affect nurses' ability to care for and communicate with patients and families facing these issues. For this reason, it is important to examine nurses' attitudes about end-of-life care, specifically hospice referral, to improve care to patients and families facing death.

"Death is still a fearful, frightening happening and the fear of death is a universal fear even if we think we have mastered it on several levels" (Kübler-Ross, 1969, p. 5).

Although death is inevitable for each one of us, discussing end-of-life preferences with patients and families is not common among nurses (Schulman-Green, Mc Corkle, Cherlin, Johnson-Hurzeler, & Bradley, 2005). Accompanied by high technology and advanced medicine, health care is credited with saving lives. The ability to rescue critically ill or injured patients makes healthcare professionals likely to focus on technology (Morreim, 1992). However, the use of extreme technology may prolong the dying process and consequently

intensify pain and suffering, diminish dignity, and decrease quality of life (p. 228).

With more people dying in the hospital setting than at home, nurses are further involved with end-of-life care. Yet, many terminally ill patients and their families report dissatisfaction with end-of-life care (Moskowitz & Nelson, 1995). Healthcare efforts that focus on quality of life are associated with higher satisfaction with end-of-life care (Patrick, Curtis, Engelberg, Nelsen, & McCown, 2003). Hospice focuses on quality of end-of-life care (O'Brien, 2002). However, patients who may be eligible for hospice are frequently not notified for referral (Davie, 1999; Kalman & Rolland, 2007). Kalman and Rolland (2007) suggested several reasons

for the possible delay in hospice referrals, one being attitudes about end-of-life care among healthcare professionals. For this reason it is important to examine nurses' attitudes about end-of-life care.

Bradley, Cicchetti, Fried, Rousseau, Johnson-Hurzeler, Kasl, et al. (2000) explored nurses' attitudes about end-of-life care. The authors felt that "a better understanding of clinicians' attitudes through measurement can both inform and help evaluate interventions and improve care of the dying" (p. 7). Bradley and colleagues developed a tool to measure clinician's attitudes about end-of-life care. The tool consisted of 12 items using a five-point Likert scale and contained three concepts:

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professional responsibility, efficacy of hospice, and clinician-patient communication about end-of-life issues. Professional responsibility involves the nurse's perception of their role in hospice referral. Efficacy of hospice involves the nurse's knowledge of hospice and their perception of its benefits. Clinician-patient communication involves the nurse's comfort level and readiness to discuss end-of-life issues.

The purpose of this article is to explore literature concerning attitudes about end-of-life care among nurses, specifically professional responsibility, efficacy of hospice, and clinician-patient communication. The major search engines used were the Cumulative Index to Nursing and Allied Health Literature (CINAHL), Medline, and PubMed, using the subject headings end-of-life and hospice. Limits were research, English, and the years 2000-2007. CINAHL produced 1,152 results on end-of-life and 1,110 on hospice. These results were combined with subjects including nurse, attitude, nursing role, knowledge, and communication. Articles were excluded if they focused on physicians, advanced practice nurses, community health, long term care, or hospital administration. Medline and PubMed revealed some similar results, although they produced fewer articles on the nursing role. Collectively, 25 articles were reviewed. Other resources included texts and educational materials.

## End-of-life care

The focus of end-of life care has changed over time, as has cause of death. Until the mid-20th century the cause of death was commonly due to infectious disease. With the advent of antibiotics after World War II, the more common cause of death became complications from chronic illness (O'Brien, 2002). Through new and evolving technology, many illnesses and conditions that shortened lives could now be cured and functions restored. For those not cured, however, the dying process was prolonged (p. 4). The concept of hospice was developed in response to this changing profile of death. Hospice was established in the United States in 1974 followed by the development of the National Hospice Organization in 1978 (Davie, 1999; Friedrich, 1999). In 1983, Medicare offered payment for hospice services (Rhymes, 1990). Today, hospice services are available to support the patient through the dying process and the family through the dying and bereavement process, yet few persons benefit because of delayed timing of referrals (O'Brien, 2002). The median length of stay in hospice is about 21 days (Emanuel, von Gunten, & Ferris, 2000; Stillman & Syrjala, 1999). In a descriptive study of patients referred for hospice services, Kalman and Rolland (2007) note that patients are often referred for hospice services ( $n = 124$ ) too late to use the services effectively. They found that because patients were referred so late in the disease process, many patients died after being referred for hospice services but before being admitted to hospice. The authors also noted an increased number of patients died within one week of admission to hospice.

SUPPORT (the Study to Understand Prognosis and Preferences for Outcomes and Risks of Treatment, 1989-1994) was a landmark study involving 9,105 seriously ill patients (SUPPORT Principal Investigators, 1995). The investigators used a two-phase design to examine quality of life and perspectives on end-of-life care. During Phase I a prospective observational design was used with the 4,301 patients. The investigators found that 79% of patients who died while hospitalized had a Do Not Resuscitate (DNR) order, although 46% of those were written within 2 days of death. Of those patients who died while hospitalized, 38% spent 10 days or more in an intensive care unit. Among patients who

could communicate effectively, 50% reported moderate to severe pain during the last days of their life. Phase II involved random selection including 4,804 physician-patient dyads. An intervention was used involving a specially trained nurse to communicate and facilitate advanced care planning to the multidisciplinary team; however, the intervention did not demonstrate statistical significance. The authors concluded that improving end-of-life care in the acute care setting may entail greater individual and societal commitment and more proactive and forceful measures.

## Professional responsibility

Professional responsibility was the first concept identified by Bradley and colleagues (2000) and involved the nurse's role as a patient advocate. Nurses are the most visible members of the healthcare team caring for dying patients and their families. The complex role of the nurse includes functioning as a resource for information involving medications, equipment, and procedures, as well as acting as coordinator of symptom management for dying patients (O'Brien, 2002; Puntillo, 2001). Accordingly, patients and families turn to nurses for information, options, and resources.

As an advocate, the nurse helps patients and families make important decisions about hospice and serves as a primary liaison between the healthcare team and the patient and family. Cramer, McCorkle, Cherlin, Johnson-Hurzeler, and Bradley (2003) explored the nurse's role in discussing hospice with terminally ill patients using a cross-sectional design with randomly selected registered nurses ( $n = 180$ ) from six community hospitals. The authors found that over half reported they did not discuss hospice with their terminally ill patients. Nurses were more likely to discuss hospice with terminally ill patients and their families if they previously had a satisfying experience with hospice or had worked as oncology nurses.

## Efficacy of hospice

Efficacy of hospice was Bradley's second concept, which involved the nurse's self-reported knowledge of and the perceived benefits of hospice (Bradley et al., 2000). As an educator and resource, it is essential for nurses to be knowledgeable about hospice. Hospice is a complex service. In the United States, hospice services are limited to the last 6 months of life by Medicare and reimbursement agencies (Ferrell & Coyle, 2002). Many countries with socialized health coverage do not struggle with a 6-month limitation but offer hospice as needed (Lichter, 1984). This may explain why some patients in the United States may not receive hospice care in a timely manner since, in reality, death cannot be accurately predicted (Ferrell & Coyle, 2001).

Education is a key component when addressing efficacy of hospice. Johnson and Slaninka (1999) used a retrospective, exploratory, descriptive design involving caregivers ( $n = 11$ ), hospice staff ( $n = 20$ ), volunteers ( $n = 22$ ), and referring physicians ( $n = 30$ ) to identify barriers to hospice care. The authors found that attitudes about hospice care were associated with the reluctance to disclose, discuss, or acknowledge that a patient was dying. Discussion of hospice was perceived as giving up on the patient. In addition, the highest rated perceived barrier was knowledge deficit, as noted by 90% of hospice staff and physicians. Cramer et al. (2003) reported that nurses having hospice training reported greater perceived role responsibility and self-rated knowledge, in addition to higher comfort levels initiating discussions in relation to end-of-life issues.

## Clinician-patient communication

Clinician-patient communication, Bradley's third concept (Bradley et al., 2000), involved the nurse's readiness to discuss end-of-life issues. This may be the most important of the three concepts. Discussions with patients and family regarding end-of-life preferences often takes place late in the course of an illness, delaying hospice referrals (Emanuel et al., 2000; Schulman-Green, et al., 2005). Consequently, many terminally ill patients and their families do not reap the benefits of hospice services. Bradley, Cherlin, McCorkle, Fried, Kasl, Cicchetti, et al. (2001) reported that nurses often did not discuss critical end-of-life issues because they preferred to leave that discussion for the medical staff.

Where do nurses learn to discuss end-of-life care? End-of-life issues are poorly addressed, both in nursing schools and healthcare institutions (Emanuel et al., 2000). The American Association of Colleges of Nurses joined forces with the City of Hope National Medical Center to educate nurses about end-of-life care (Sherman, Matzo, Panke, Grant, & Rhome, 2003). Subsequently, the End-of Life Nursing Education Consortium (ELNEC) was developed with funding support from the Robert Wood Johnson Foundation. The principle goal of the training program was to provide nurses with information and resources for end-of-life care (Sherman et al., 2003).

Programs designed to improve communication skills are being used worldwide. Such programs include the Program to Enhance Relational and Communication Skills (PERCS), which involved a series of scenarios focusing on end-of-life issues and situations to help clinicians develop effective communication skills (Burns & Rushton, 2004). Buckman (1989) developed a six-step protocol for "breaking the bad news" that is used throughout the United States and Canada, in addition to the ELNEC programs (von Gunten, Ferris, & Emanuel, 2000).

## Implications for nurses

Nurses' attitudes about death affect the care they give to dying patients and their ability to discuss hospice and other end-of-life choices. As healthcare technology advances, more terminally ill patients and their families will need nurses who are willing to discuss end-of-life options. Discussions between nurses and terminally ill patients are often delayed or do not occur at all. Although there are programs to educate nurses, many have not been evaluated for efficacy. Colleges of nursing and healthcare institutions do not include much coursework on practical skills for working with dying patients. Faculty need to include hospice and palliative care clinical rotations. Healthcare institutions need to offer end-of-life competencies for new RN graduates as well as seasoned nurses. These efforts will change attitudes and, in turn, improve end-of-life care.

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## Heart and brain matters in heart failure: A literature review

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### Abstract

Heart failure (HF) patients are reported to have twice the risk of having cognitive deficits compared to the general population. Cognitive impairment in this population may cause non-compliance to prescribed self-care regimens and delay in seeking care that may potentially lead to frequent readmissions. Although cognitive deficit is common among people with HF, cognitive screening is not routinely performed due to lack of a simple screening tool and the misconception that cognitive changes are part of normal aging. Therefore, future research needs to focus on identifying a simple screening tool that nurses can use to screen for subtle changes in cognition including forgetfulness and delayed recall. Early identification of subtle cognitive changes has the potential to guide healthcare providers to formulate feasible strategies to understand and/or prevent a low cardiac output state before major cognitive impairment becomes evident.

Despite the decline in the incidence of other cardiovascular diseases, the incidence of heart failure (HF) remains unchanged, with more than 550,000 new cases diagnosed annually in the United States (American Heart Association, 2006). The prevalence and incidence of HF varies with age, gender, and ethnicity, presenting at higher rates among older adults (Barker, Mullooly, & Getchell, 2006), females (Levy et al., 2002), and African Americans (Wolinsky, Overhage, Strump, Lubitz, & Smith, 1997). In the 1950s, the most common causes of HF in the United States and other western nations were hypertension and valvular heart diseases (Braunwald & Bristow, 2000; Ho, Anderson, Kannel, Grossman, & Levy, 1993). Currently, the most common causes for HF are ischemic heart disease among older men, idiopathic dilated cardiomyopathy among young adults, and hypertension among older adults and females (Braunwald & Bristow, 2000; Ho et al., 1993). According to the American

Heart Association (AHA), HF currently represents the single most costly cardiovascular illness in the United States, with an estimated direct and indirect cost of \$29.6 billion for the year 2006 compared to \$27.9 billion in 2005, of which \$14.7 billion was paid in the year 2005 towards hospitalization alone (AHA, 2006; Heywood & Saltzberg, 2005). The cost for managing HF depends on the complexity of the disease and the complexity of services delivered (Galbreath et al., 2004).

### Cognitive deficit in HF

Among the general population in the United States, the prevalence of dementia doubles with every 5 years of increase in age (Jorm, Scott, Cullen, & MacKinnon, 1991). Alarming, HF patients are reported to have twice (RR = 1.96) the risk of having cognitive dysfunction compared to the general population of those 65 years or older, with an increased

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prevalence of cognitive decline among older females (Cacciatore et al., 1998). Cognitive impairment was more prevalent in patients with HF 28.0% compared to those with cancer 25.8% (Corsonello et al., 2005). HF patients with cognitive dysfunction have a 66% increased relative risk of mortality compared to people with diabetes mellitus, myocardial infarction, stroke, cancer, and hip fractures (Finkel, 2003). The prevalence of cognitive dysfunction among HF patients ranges from 53% to 58%, with increasing prevalence among older adults (Zuccala et al., 2001). These figures are impressive when one considers the estimated prevalence of HF as 5 million in the United States.

## Normal brain aging

Cognitive deficits without dementia are commonly considered a normal consequence of brain aging (Ritchie & Touchon, 2000). A number of clinical labels have been proposed to describe cognitive deficits that are considered part of the normal aging process. An early label for cognitive impairment was benign or malignant senescent forgetfulness (Kral, 1972). This early label was criticized and classified as age-associated memory impairment by Crooks in 1986 (Goldman & Morris, 2001), age-associated cognitive decline (Levy, 1994), and age-related cognitive decline in the DSM IV Criteria (Celsis, 2000), all of which fall within the limits of normal aging. Not all cognitively impaired people have dementia, and those who do not meet the current criteria for dementia have received less attention by researchers.

## Cardiac dementia

The so-called cardiac dementia, a subtype of vascular dementia, recently has been introduced as a concept to explain cognitive deficits in HF (Rockwood, Bowler, Erkinjuntti, Hackinski, & Wallin, 1999). In contrast to the dementia related to many of the neurodegenerative illnesses, patterns of cognitive impairment arising from cardiac origin are subtle, with changes in memory and reasoning (Rockwood, Dobbs, Rule, Howlett, & Black, 1992). Multiple ischemic episodes due to atherosclerosis (Wallin & Blennow, 1993), chronic intermittent or diurnal ischemia due to cerebral infarcts (Erkinjuntti, 1997; Tatemichi, 1990), and atrial fibrillation (Sulkava & Erkinjuntti, 1987) resulting in embolic stroke have been identified as subsets of vascular dementia.

The type of cognitive deficit seen among people with HF differs in its pathology due to chronic cerebral hypoperfusion related to impaired cardiac function (Acanfora et al., 1996). Cardiac dementia as a sub-type of vascular dementia was originally identified in cases of cardiac dysarrhythmias, such as third-degree atrio-ventricular block and sick sinus syndrome (Sulkava & Erkinjuntti, 1987). These conditions also cause chronic hypoperfusion due to hypotension or bradycardia that result in low cardiac output. Improved cognitive function has been reported after pacemaker implantation for symptomatic bradycardia (Koide, Kobayashi, Kitani, Tsunematsu, & Nakazawa, 1994). Similarly, improved cognitive function had been reported after heart transplant (Bornstein, Starling, Myerowitz, & Hass, 1995; Roman, Kubo, Ormazza, Francis,

Bank, & Shumway, 1997; Scahill, Petrucci, Brozena, Cavarocchi, & Jessup, 1989), implantation of ventricular assistive device (Zimpfer et al., 2006), and cardiac resynchronization (Auricchio et al., 2002). A 30% improvement in cognitive performance was demonstrated with the use of ACE inhibitors (Zuccala, Onder et al., 2005). The findings of reversible cognitive deficit suggest that the type of cognitive deficit seen in chronic HF is cardiogenic dementia related to chronic cerebral hypoperfusion.

## Cerebral hypoperfusion

By definition, HF is a disorder that results in inadequate tissue and organ perfusion (Braunwald & Bristow, 2000), and the brain is the vital organ that requires large amounts of oxygen for adequate function (Lezak, 1994). HF is classically defined by hemodynamic concepts. The pathophysiology of cognitive deficits in HF is the result of inadequate cerebral perfusion to the areas of brain due to impaired cardiac function in HF (Pullicino & Hart, 2001). Significant impairment in hemodynamic measures such as low cardiac output, left ventricular ejection fraction (LVEF) and left ventricular filling pressures causes inadequate supply of

oxygen to all tissues and organs (Cohn, Ferrari, & Sharpe, 2000). Decline in cognitive function has been associated with diminished ejection fraction, low cardiac output, and/or cardiac index and supports the role of reduced cerebral blood flow and cerebral perfusion among HF patients as an explanation of cognitive deficit (Gorkin et al., 1993; Roman et al., 1997; Zuccala, Marzetti et al., 2005). On the contrary, a nurse-based interventional study on HF reported no correlation between mini mental state examination (MMSE) score and left ventricular ejection fraction (Karlsson et al., 2005).

A similar pathophysiology of chronic cerebral hypoperfusion-induced progressive brain injury has been reported in animal models (Dijkhuizen et al., 1998; Sarti, Pantoni, Bartolini, & Inzitari, 2002; Tanaka, Wada, & Ogawal, 2000), among stroke survivors (Patel, Coshall, Rudd, & Wolfe, 2003), and sudden cardiac arrest survivors (Sauve, Doolittle, Walker, Paul, & Scheinman, 1996). Moreover, the episodic decompensation of HF symptoms resulting in hypoxia may predispose to autoneurotoxicity or neural cell death throughout the nervous system due to loss of brain plasticity resulting in cognitive dysfunction (Kolb, Gibb, & Robinson, 2003). It is clearly evident from the literature that the impaired cardiac function that causes cerebral hypoperfusion is the common etiology for cognitive deficits among HF patients (Almeida & Flicker, 2001). Collectively, it has been suggested that cerebral hypoperfusion might account for the disproportionate prevalence of cognitive impairment among patients with HF (Putzke, Williams, Rayburn, Kirklin, & Boll, 1998).

## Mild cognitive impairment

The cognitive deficits seen in HF are subtle. The subtle cognitive changes in HF mimic mild cognitive impairment (MCI) by character and pathology. MCI refers to the clinical state of individuals who have memory impairment but are otherwise functioning normally (Petersen et al., 2001). MCI has been increasingly recognized as a neurologic transition stage

By definition, HF is a disorder that results in inadequate tissue and organ perfusion, and the brain is the vital organ that requires large amounts of oxygen for adequate function.

*To date, cognitive deficits among people with HF have not been examined as a factor influencing hospital readmissions.*

between normal cognitive function that progresses to dementia or Alzheimer's disease (Petersen et al., 2006).

Similarly, in HF the cognitive dysfunctions are subtle transient impairment affecting verbal memory, forgetfulness, delayed recall, and impaired learning (Antonelli et al., 2003). Most often, these subtle cognitive changes are not identified by practitioners until the person displays inability to carry out everyday activities or are reported by family members (Antonelli et al., 2003).

Meyer, Rauch, Rauch, & Haque (2000) followed a total of 224 normal subjects for a mean period of 5.8 years who were at increased risk for cognitive decline and reported a decreased cortical perfusion in patients with MCI suggesting a decreased brain perfusion as an etiology for MCI. A similar reduction in brain perfusion to the posterior cortical area was associated with HF, suggesting that persons with MCI and HF manifest similar pathological changes in the brain due to hypoperfusion that manifests in subtle cognitive dysfunction (Alves et al., 2005; Skoog, Palmertz, & Anderson, 1994).

## Impact of cognitive dysfunction in HF

### Poor adherence to self-care

Wehby and Brenner (1999) found that patients with HF find it difficult to retain information and do not appreciate the relevance of the information provided by their clinicians resulting in non-compliance to prescribed self-care regimens for management of HF. Cline and colleagues (1999) found that only 55% of HF patients could correctly name their prescribed medications and 27% were not following their HF treatment regimens (Cline, Bjorck-Linne, Israelsson, Willenheimer, & Erhardt, 1999). Several authors have reported similar deficits in memory, forgetfulness, and other cognitive abilities that affect adherence to HF self-care practices (Almeida & Flicker, 2001; Antonelli et al., 2003;

Grubb, Simpson, & Fox, 2000; Lackey, 2004; Leventhal, Riegel, Carlson, & DeGeest, 2005).

### Delay in seeking care

Deaton and Grady (2004) reported that symptom monitoring in HF is difficult for patients and multiple factors such as older age, lower education, and lack of social support are associated with inadequate self-care behavior, non-compliance to self-care practices, and delay in seeking treatment for HF symptoms. Similarly, Friedman (1997) reported that older adults experienced symptoms of HF for a relatively longer time than younger adults before obtaining health care. Recently, Jurgens (2006) developed a model combining physical and cognitive aspects of the HF symptom experience to examine delay in care-seeking among HF patients. She found that cognitively impaired HF patients have poor somatic awareness for HF symptoms that predict delay in seeking care.

### Increased readmission rates

The economic impact of HF is driven largely by high hospital readmission rates: 2%, 15%-20%, and 50% within 2 days, 1 month, and 6 months of initial diagnosis, respectively (Aghababian, 2002; Foote, 2003). Older adults with HF have the highest hospital readmission rates, ranging from 29% to 47% of all hospitalized adult patients, primarily in the first few weeks after discharge (Hammer & Ellison, 2005). Approximately 50% of the readmissions of people with HF have been attributed to lack of knowledge and adherence to self-care recommendations (Clark, Tu, Weiner, & Murray, 2003). Knox and Mischike (1999) reported that HF exacerbation due to non-compliance with diet (18%), non-compliance to medication (15%), lack of social support (21%), and failure to seek prompt medical attention (20%) led to hospital readmission. Similarly, lack of compliance to HF self-care regimen increased hospital readmission rates by 20-64% (Leventhal et al., 2005; Stromberg, Matensson, Fridlund, Levin, Karlsson, & Dahlstron, 2003). Lack of

knowledge alone, however, was not a predictor for readmission among HF patients (Bennett, Baker, & Huster, 1998). Until recently, researchers have focused on providing cost-effective management such as: tailored education (Sethares & Elliott, 2004); family support (Dunbar, Clark, Deaton, Smith, De, & O'Brien, 2005); individual peer support (Riegel & Carlson, 2004); enhanced discharge planning (Pugh, Haven, Xie, Robinson, & Blaha, 2001); disease management programs (Rich et al., 1995); specialized nurse management programs (Stewart & Horowitz, 2003); home visiting, education, and support intervention (Krumholz et al., 2002); team management (Grady et al., 2000); and comprehensive discharge planning (Naylor et al., 1999) in an effort to reduce readmissions. To date, cognitive deficits among people with HF have not been examined as a factor influencing hospital readmissions.

### Increased mortality rates

Cognitive impairment is associated with a fivefold increase in mortality of HF patients, with a relative risk of 4.9 (Zuccala et al., 2003). Even taking into account other co-morbidities that are associated with increased mortality among patients with HF such as stroke (Tatemichi, Desmond, Stern, Paik, Sano, Bagiella, 1994), diabetes (Croxon & Jagger, 1995), atrial fibrillation (Kilander, Andren, Nyman, Lind, Boberg, & Lithell, 1998), and anemia (Beard, 2003). Of all comorbidities, 38% was related to cognitive impairment (Lien, Gillespie, Struthers & McMurdo, 2002), thus making cognitive deficit an independent prognostic marker among patients with HF.

### Impaired quality of life

Severity of HF associated with NYHA functional classification of III or IV predicted worse health-related quality of life (Bennett, Cordes, Westmoreland, Castro, & Donnelly, 2000). Poor self-reported cognitive function also has been correlated with poor health-related quality of life among patients with HF, particularly regarding emotional aspects

(Juenger et al., 2002). In addition, being older and having HF have been identified as factors that limit functional abilities and impair quality of life among NYHA class III HF patients (DeJong, Moser, & Chung, 2005).

## Cognitive screening in HF

Although cognitive deficit among HF patients is common and can be reversed with therapies, cognitive screening is not routinely performed in the outpatient setting. An extensive literature review on cognitive deficit in HF showed that HF researchers have used a variety of neuropsychological instruments, anywhere from 4-10 in a single study (Antonelli et al., 2003; Bornstein et al., 1995; Trojano et al., 2003). However, no simple screening instrument that identifies subtle cognitive changes is available for use in the clinical arena (Riegel et al., 2002). Researchers have mainly focused on (a) understanding the etiology of cognitive dysfunction in HF (Pullicino, Mifsud, Wong, Graham, Ali, & Smajlovic, 2001), (b) describing the types of subtle cognitive dysfunction in HF (Grubb et al., 2000; Putzke et al., 1998; Trojano et al., 2003), and (c) explaining reversibility of cognitive dysfunction following interventions such as heart transplant (Roman et al., 1997; Schall et al., 1989). The inconsistencies in the use of neuropsychological instruments among HF researchers limit the ability to make comparisons across studies. In addition, the HF literature indicates that a global neuropsychological measure, such as the MMSE is not sensitive enough to capture the early subtle cognitive changes manifested by HF patients due to hypoperfusion (Cupples & Stilley, 2005).

Although cognitive dysfunction is reversible in HF, it is apparent that sustained reduction in cardiac output may lead to permanent, non-reversible cognitive impairment when the hypoperfusion state reaches its neural threshold, called the "ischemic penumbra" (Heiss, 2000; Saita et al., 2004). The ischemic penumbra represents part of the hypoperfused region associated with focal brain ischemia that potentially can be salvaged by timely intervention. Therefore, early identification of the subtle cognitive changes in HF patients is important before they cross this ischemic threshold, to prevent permanent cognitive impairment. In addition, the U.S. Preventive Service Task Force Guidelines calls for routine screening for cognitive changes among all older adults

to identify reversible causes for cognitive deficits (Boustani, Peterson, Hanson, Harris, & Lohr, 2003). Thus, a routine cognitive screening among HF patients is necessary.

## Implications for practice

Because of the high incidence of HF, it is important to recognize the incidence of potential cognitive impairment in this population that may cause non-compliance to prescribed HF regimen, delay in seeking care for HF symptoms, and potential frequent readmissions to hospitals and emergency room visits. Currently, no simple cognitive screening tool to assess early cognitive changes among HF patients is available for use by nurses in the clinic or home care setting. Riegel and colleagues (2002) have tested four cognitive screening instruments among people with HF, including the MMSE. Riegel reported varied effectiveness among the screening tools, with only 2.4% of their participants scoring below the clinical cutoff score of 24 on the MMSE, confirming low sensitivity of the MMSE in picking up subtle cognitive changes among their HF participants. Riegel recommended further research to identify a simple cognitive measurement tool to pick up early changes. Using several cognitive screening tools takes time and is not feasible to do routinely in an outpatient setting. Future research may need to focus on identifying a simple cognitive screening tool that will help nurses screen for early cognitive changes during their encounter in the clinic or during home visiting. Often, family members report early cognitive changes such as forgetfulness and delayed recall in their loved

**Currently, no simple cognitive screening tool to assess early cognitive changes among HF patients is available for use by nurses in the clinic or home care setting.**

ones to nurses and nurse practitioners more than to physicians. Early identification of these subtle cognitive changes has the potential to guide healthcare providers to formulate feasible strategies to understand and/or prevent low cardiac output state before the cerebral perfusion pressure crosses the ischemic threshold resulting in permanent non-reversible cognitive deficits. Early identification of potential cognitive dysfunction by nursing staff may enable healthcare providers to make appropriate referrals for neuropsychological testing as warranted. Early screening of cognitive deficit may enhance adherence to heart failure regimen by HF patients and thus reduce hospital and ICU admissions. Lastly, addressing cognitive function may improve quality of life in HF patients.

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# WHAT'S NEW IN THE HEALTHCARE LITERATURE

## Nursing practice

Wolf, Z. R., & Zuzelo, P. R. (2006). "Never again" stories of nurses: Dilemmas in nursing practice. *Qualitative Health Research, 16*, 1191-1206.

Wolf and Zuzelo present a fascinating report of a qualitative study. The authors asked practicing nurses to submit their personal stories of "never again" situations they had experienced in nursing care. These "never again" stories were about "undesirable situations that nurses recall vividly and, having participated in them previously, vow not to allow [to] recur during future, similar situations" (2006, p. 1192). The investigators posed two research questions: "What is the nature of never again stories?" and "Are there ethical dilemmas revealed in never again stories that RNs tell about their clinical practice?" (p. 1192).

The nurses' stories were analyzed for themes occurring in the narrative stories. Twenty female nurses from the United States and Canada participated voluntarily. The Investigational Review Board at the authors' institution approved the study.

Wolf and Zuzelo's description of their findings makes compelling reading. Nurses who have practiced clinically will be able to see similarities between the participants' experiences and their own. These participants confronted many everyday ethical dilemmas. The quotations provided from the participants' stories are extremely rich and complex. The experiences included denying patients' pleas to see a loved one just prior to intubation or other emergency procedures, treating patients against their explicit wishes, or denying a patient's or family member's request by citing the authority of "hospital policy" as the rationale. In other stories, nurses reported providing care without being fully informed (e.g., knowing a drug's side effects), acting on second-hand information instead of making their own assessments, or not reporting unprofessional conduct they had witnessed. These "never again" incidents ultimately changed the nurses' practices in very concrete ways. The authors conclude:

Patients left a positive legacy. The passion of nurses persisted as they shared stories so that others would avoid pain. They also influenced hospital policies to change, wrote new policies, and pushed other nurses to give creative, ethical, and family-centered care. They stood for quality patient care. (p. 1204)

The findings from this research study are important for all nurses – both novice and well experienced as well as those providing direct care or serving in administrative or academic roles. Wolf and Zuzelo give us substantive material for thoughtful reflection and support the concept that nurses have power to intervene in meaningful ways to affect patient-centered care.

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## Gender bias

Arslanian-Engoren, C. & Engoren, M. (2007). Using a genetic algorithm to predict evaluation of acute coronary syndromes. *Nursing Research, 56*, (2), 82-88.

A study was conducted, using a genetic algorithm (GA), to determine the ways that emergency department (ED) nurses decide if a patient has acute coronary syndrome (ACS), and to determine if gender influenced

the ED nurses' decisions. GAs are an evolutionary programmatic computing method that employs a heuristic system to predict outcomes.

The sample included 828 correctly completed questionnaires (3,000 vignettes were sent out) that were created using Monte Carlo simulations. The questionnaires included fictional patient information that listed the history and current condition of the patients, including vital signs and clinical symptoms. The GAs were then used to determine in what combinations of these clinical symptoms equated to be the manifestations of ACS by ED nurses. Binary logistic regression (BLR) was performed with the same nurses using the same characteristics from the vignettes for comparison. A receiver operating characteristic (ROC) curve was used to plot the data.

Out of the 419 male patients, 310 were diagnosed with ACS; while out of the 409 female patients only 293 were diagnosed with ACS. The GAs results were 0.721 for male patients under the ROC curve while BLR results were 0.640 under the ROC curve. When the same technique was applied to the female patients, both GA and BLR had common results of 0.612 and 0.627 under the ROC curve. In this study, GAs provided more sensitive results than BLR. GAs and BLR statistical measures are recommended for comparison of predictive data of disorders and diseases. This study supported previous research that documents the influence of gender on the diagnosis of ACS. Recognition of gender bias can lead to improved assessment and diagnosis of ACS.

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## Collaborative care

Callahan, C. M., Boustani, M. A., Unverzagt, F. W. et al. (2006). Effectiveness of collaborative care for older adults with Alzheimer Disease in primary care: A randomized controlled trial. *JAMA, 295*, 2148-2157.

Several national reports suggest collaborative team care is an important factor in improving healthcare quality. Yet the single-provider model used in primary care offices and clinics can be a barrier to collaboration, especially for patients with dementia, when recommended treatment protocols cannot be fully implemented due to time constraints and limited teamwork.

In their study, Callahan et al. (2006) offer a new approach. They evaluated an innovative collaborative case management (CCM) model designed to improve implementation of guidelines for treating patients with dementia in physician offices. Using a controlled clinical trial, patients in the experimental group were assigned to the CCM team for 12 months. The team was led by a physician and a geriatric nurse practitioner (GNP) case manager. A cluster of interventions included treatment with cholinesterase inhibitors, education on communication skills, caregiver coping skills, exercise guidelines, legal and financial advice, a caregiver guide, and bimonthly contacts with the case manager. Specific protocols were used to treat patients' behavioral symptoms. Patients in the control group were assigned to a physician provider (i.e., not a team) and received augmented services including written materials, education, and counseling by a GNP.

Study findings demonstrated that the CCM patients had fewer behavioral and psychiatric symptoms than controls and were more likely to be

treated with recommended medications at 12- and 18-month follow-up. Caregivers of patients in the intervention group showed improvement in depression and reduced levels of distress when compared to controls. No change occurred in patients' activity level, cognition, rates of hospitalization, and use of nursing homes. The authors concluded that the comprehensive and integrated CCM model was more effective than the single-provider approach for patients with dementia. The success of the CCM model lends support to current efforts to redesign primary care office practices to improve quality care. Additional outcomes, such as functional ability, might be positively affected if other professionals are included on the CCM team.

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## End-of-life care

Rosenfeld, P., Dennis, J., Hanen, S., Henriquez, E., Schwartz, T. M., Correoso, L., et al. (2007). Are there racial differences in attitudes toward hospice care? A study of hospice-eligible patients at the Visiting Nurse Service of New York. *American Journal of Hospice & Palliative Care*, 24(5), 408-416.

Rosenfeld and colleagues investigated the "attitudes, perceptions, and knowledge of hospice care" (2007, p. 408) of patients who were currently enrolled in the adult home care program run by the Visiting Nurse Service of New York, the largest not-for-profit home health agency in the United States. The authors reported that the literature on home-based hospice care is substantially less than that focused on institution-based hospice programs. They also noted that "much attention is...directed to caregivers, providers, and administrators rather than the patients themselves" (p. 410). The inclusion criteria for the participants were: (a) life expectancy less than 6 months, (b) poor prognosis, (c) telephone access, (d) able to complete a 30-minute interview, and (e) English-speaking. The interview survey tool was developed by the investigators and was based on their review of existing literature and similar surveys.

Telephone interviews were conducted with 32 individuals (19 Black, 13 White, and 4 Hispanic). Unfortunately, results for the Hispanic patients were not included in the report. The authors deemed that too few Hispanic participants were interviewed in order to include analysis of their findings. Also, very importantly, they believed the data from the Hispanic participants was preliminarily different enough that it could not be combined with data for either the Black or White participants.

Despite a very small sample size and analysis revealing predominantly non-significant differences between the Black and White participants, Rosenfeld and colleagues did report differences that potentially have important implications for nurses. Thirty-two percent of the Black participants reported they believed they would receive better care if they were a different race. The authors noted this finding is consistent with that of previous researchers about a pervasive historic mistrust of the (predominantly) White healthcare system. Interestingly, the participants did not differ by race about their wishes to die at home, to be pain-free and comfortable at the time of death, or to document their wishes in writing. Regarding the concept of hospice care, 56% of White

respondents knew about hospice, compared to only 44% of Black respondents. Both Black and White respondents reported serious misconceptions about hospice. For example, "hospice means giving up," "hospice means you get no treatment," and "hospice care is only for when there is no hope" were all cited by participants as reasons for not accepting hospice care.

This study has important implications for nurses. First, a replication study should be conducted with a larger sample size. Investigators should conduct a power analysis to ascertain study size in order to increase the likelihood of obtaining significant differences if they do indeed exist. Second, education of patients and their loved ones about hospice should become a priority. Finally, research focused on patients of Hispanic/Latino ethnicity is desperately needed.

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## Practitioners' attitudes

Mian, P., Warchal, S., Whitney, S., Fitzmaurice, J., & Tancredi, D. (2007). Impact of a multifaceted intervention on nurses' and physicians' attitudes and behaviors toward family presence during resuscitation. *Critical Care Nurse*, 27(1), 52-61.

Mian and colleagues conducted a two-group pretest/posttest design using a survey developed by the researchers to evaluate the "before and after attitudes and behaviors of nurses and physicians after implementation of a family presence program in the emergency department" (2007, p. 53). The survey was distributed twice to all nurses and resident and attending physicians employed in the emergency department: once before initiation of the program and again one year after family presence was implemented. The initial survey was completed by 86 nurses (81% response) and 35 physicians (50% response). The follow-up survey was completed by 89 nurses (80% response) and 14 physicians (32%).

The survey was evaluated for content validity and pilot tested by expert emergency nurses. The researchers reported the "Cronbach alpha for internal reliability was acceptable for total items and subscales" (p.54) but did not include methods of data analysis (factor or confirmatory factor analysis) to ascertain whether these subscales were actually supported.

Initial survey results revealed nurses were more supportive than physicians of family presence at resuscitations. Both groups were less supportive of presence during invasive procedures and indicated that presence did not help families with death. In the follow-up survey, nurses' support for family presence increased, but beliefs about benefits to families was unchanged. Physicians were less supportive of family presence and were more concerned about practice in the post survey. The study findings are consistent with other research and support the need for continued education to support implementation of evidence to clinical practice.

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## ■ Selected upcoming events

### **Eastern Nursing Research Society Annual Scientific Sessions**

March 27-29, 2008

Philadelphia, PA

[www.enrs-go.org](http://www.enrs-go.org)

### **NYSNA Lobby Day**

April 8, 2008

Albany, NY

[www.nysna.org/lobbyday/index.htm](http://www.nysna.org/lobbyday/index.htm)

### **National Evidence-Based Practice Conference**

April 24-28, 2008

Coralville, IA

[grace-rempel@uiowa.edu](mailto:grace-rempel@uiowa.edu)

(319) 384-6737

### **American College of Nurse Midwives 53<sup>rd</sup> Annual Meeting**

May 23-29, 2009

Boston, MA

[www.midwife.org/am/index.cfm](http://www.midwife.org/am/index.cfm)

### **Examining Diversity: An Intellectual Adventure**

NYSNA

June 16-18, 2008

Saratoga Springs, NY

[www.nysna.org/ce/workshops.html](http://www.nysna.org/ce/workshops.html)



## Call for Papers

The Journal of the New York State Nurses Association is currently seeking papers for the Spring/Summer 2008 issue.

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