Are Nurses Recognizing Delirium?
A Systematic Review

Thirty-eight percent of all hospital inpatients in the United States in 2005 were older than age 65 (DeFrances & Hall, 2007). The prevalence of delirium on hospital admission has been reported from 14% to 24%, whereas the incidence has been documented from 6% to 56% (Agostini & Inouye, 2003; Inouye, 1998). Thus, delirium is a prevalent, costly, and global problem in older adults. According to the American Psychiatric Association (APA) (2000), delirium has four components:

- Disturbance of consciousness with reduced ability to focus, sustain, or shift attention.
- Change in cognition or development of a perceptual disturbance that is not better accounted for by a preexisting, established, or evolving dementia.
- The disturbance develops over a short period of time and tends to fluctuate during the course of the day.
- Evidence that the disturbance is directly caused by the effects of a medical condition.

Unrecognized delirium in older adults results in poor outcomes, including complications during hospitalization, increased length of stay, nursing home placement, and death (Andrew, Freter, & Rockwood, 2006; Marcantonio, Ta, Duthie, & Resnick, 2002; McAvay et al., 2006; McCusker, Cole, Dendukuri, Belzile, & Primeau, 2001; O’Keeffe & Lavan, 1997; Trzepacz, 1996). Nurses spend considerable time at the bedside and therefore are in an ideal position to recognize delirium (Foreman, 1986). Although numerous reviews of other aspects of delirium have been reported, studies about nurse recognition of delirium have not been critically reviewed. The purpose of this article then is to present a systematic review of the literature on nurse recognition of delirium and to suggest a course of action to improve delirium education and practice.

SEARCH METHODS
We conducted a comprehensive review of the literature on all original research articles reporting sources of data published through June 2007 using the following databases: MEDLINE, CINAHL, PsycINFO, and ProQuest Psychology Journals. Search terms included delirium or acute confusion and...
nurses, recognition, identification, nurse recognition, or nurse identification. Selection criteria were that the article was in English and reported primary data. Exclusion criteria were non-English articles, studies not reporting primary data, and studies that did not include measurement of nurse recognition of delirium. For example, some studies were excluded because they measured only physician recognition of delirium.

Ten articles were selected for the final systematic review (Figure). Articles were reviewed and graded by the two authors (M.R.S. and D.M.F.) using the Modified Scale to Assess Quality of Studies (Chalmers et al., 1981; Elie, Cole, Primeau, & Bellavance, 1998), which considered aspects of design, measures, sampling, and analysis. Possible scores range from 0 (low quality) to 16 (high quality), with results of this review ranging from 4 to 14. When differences occurred in two of the study quality scores, the raters discussed the areas of disagreement and rescored the studies, reaching accordence on the rating. We also used evidence grading by Harbour and Miller (2001), the levels for which range from A to D. The studies in this review were all classified as level C or D (Table).

RESULTS

We compiled and reported the results, including rates of nurse recognition of delirium, assessment, documentation, and other pertinent findings. A listing of the characteristics of the studies is detailed in the Table.

Description of Methods

Definitions and Measures. The Diagnostic and Statistical Manual of Mental Disorders (APA, 1980, 1987, 1994) was used as the standard to define delirium. With the exception of one study (Fick, Hodo, Lawrence, & Inouye, 2007), the researchers accepted nurses’ documentation of any of the domains of delirium as satisfactory evidence that nurses recognized delirium. Rarely was the term delirium included in the nurses’ documentation. For example, “records were reviewed retrospectively on a patient’s discharge from the hospital for documentation about the diagnosis of delirium, or reference to this clinical problem using one or more of the myriad synonyms or by a description of the patient’s behavior via clinical indicators or symptoms of delirium” (Milisen et al., 2002, p. 25).

The instrument used to assess delirium varied greatly. In the 8 studies measuring a patient population, 4 used the Confusion Assessment Method (CAM) (Bowler et al., 1994; Inouye, Foreman, Mion, Katz, & Cooney, 1994).
2001; Inouye et al., 2005; Milisen et al., 2002), and each of the following were used once: Abbreviated Mental Test score (Young & George, 2003), Delirium Symptoms Interview (DSI) (Morency, Levkoff, & Dick, 1994), modified Organic Brain Syndrome scale (Gustafson, Brännström, Norberg, Bucht, & Winblad, 1991), and case vignettes (Fick et al., 2007). The case vignettes were designed after performing a literature review of delirium and delirium superimposed on dementia. The vignettes were subsequently reviewed by a geropsychiatrist and finally by an expert panel of four physicians and nurse experts to assess content validity and expert agreement.

**Definition of Populations.** Studies that used the patient as the unit of analysis included older adults at least older than age 60 who were enrolled regardless of a diagnosis of dementia. One study used the nurse as the unit of analysis (Fick et al., 2007). This was a convenience sample of medical-surgical nurses with a mean age of 40, an average of 14 years of experience, and with 65% having at least a bachelor's degree (Fick et al., 2007). Morency et al. (1994) partially informed of their nurse population: 92% had a bachelor’s degree or higher and were working within a primary nursing model with 24-hour accountability for patients. Surprisingly, Eden and Foreman (1996) found no correlation between nurse recognition of delirium and the educational or experience levels of the nurses in their sample. No other nurse populations were described.

## Inadequate Assessment and Documentation

In 7 of the studies, the authors suggested that although nurses assessed their patients, they did not perform a detailed enough evaluation and subsequent documentation to accurately report their patients’ cognitive status. For example, Milisen et al. (2002) wrote that, “although nurses’ clinical notes contained information about patients’ cognitive status, the documentation of patients’ mental status was seldom accurate” (p. 27).

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**Figure: Decision tree for study inclusion in systematic review of nurse recognition of delirium.**

3,837 articles identified in MEDLINE, CINAHL, PsyCINFO, and ProQuest

- 3,715 articles excluded by review of title and abstract (duplication and nondelirium studies)
- 122 articles reviewed
- 112 articles excluded:
  - 29 nonresearch delirium articles
  - 26 tools and/or interventions for delirium
  - 16 outcomes of delirium
  - 9 physician recognition of delirium
  - 8 prevalence of delirium
  - 7 risk factors for delirium
  - 4 experience of delirium
  - 4 symptoms of delirium
  - 3 review articles
  - 2 standards of practice
  - 1 opinion

10 studies included in review

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Figure: Decision tree for study inclusion in systematic review of nurse recognition of delirium.
Nurse Knowledge of Delirium

Two studies included a measure of nurse knowledge of delirium. The first formally measured geropsychiatric knowledge with the Mary Starke Harper Aging Knowledge Examination (MSHAKE) (Fick et al., 2007). Although the nurses scored well on the MSHAKE, they did not score highly on the case vignettes. Young and George (2003) included an educational intervention for one of three study groups, with results providing evidence that guidelines alone do not effect change. When education of staff and management guidelines were coupled, there was some improvement in the process of care and the outcomes of the patients with delirium. Milisen et al. (2002) concluded that nurses “knew” what confusion was but when asked specifically to define it, they did not consistently report the same understanding. However, Fick et al. (2007) reported that nurses correctly stated some of the causes of delirium.

Communication

An acute observation was made by the research assistants in Morency et al.’s (1994) study. They used the DSI, which dictates patient questioning as well as observation to detect the domains of delirium. They attempted to make the patient feel at ease, then proceeded to ask if the patient had any unusual thoughts or experiences. The responses were often an admission that patients were afraid to reveal to anyone for fear of being labeled as “crazy.” This portrays one circumstance in which nurse-patient and nurse-nurse communication is critical. This information is vital to the understanding of the lack of nurse recognition of fluctuating behavior—a key domain of delirium. Inouye et al. (2001) similarly reported that patient compliance was mistakenly accepted as an indication of intact mental status.

Nurses reported frustration in reporting symptoms to physicians without receiving helpful guidance in return (Eden & Foreman, 1996). If physicians are not responding to nurses’ reports of symptoms of delirium (and physicians typically do not read nurses’ notes), communication between nurses and physicians may be a barrier to recognizing delirium (Bowler et al., 1994; Laurila et al., 2004).

In 6 of the articles (Gustafson et al., 1991; Inouye et al., 2001, 2005; Laurila et al., 2004; Morency et al., 1994; Young & George, 2003), caregivers were asked questions about the patients’ history of cognitive functioning. This information was essential to establish the patient’s cognitive baseline, as well as reveal any recent changes experienced by the patient. Families notice the subtle changes in the patient, especially when the patient is experiencing hypoactive delirium.

Risk Factors for Underrecognition of Delirium in Older Adults

The presence of hypoactive delirium, age 80 or older, vision impairment, and dementia are reported risk factors for the underrecognition of delirium in older adults (Fick et al., 2007; Inouye et al., 2001; Milisen et al., 2002). Inouye et al. (2001) found that when all four of these factors are present, the risk of underrecognition increased 20-fold.

DISCUSSION

The most compelling finding in this review is that although related, the concepts of nurse knowledge of delirium, nurse recognition of delirium, and how nurses assess and document delirium in older adults are different. According to the Merriam-Webster Online Dictionary (n.d.a), knowledge is a familiarity, awareness, or comprehension acquired by experience or study, and recognition (n.d.b) is the awareness that something perceived has been perceived before. This means that knowledge precedes recognition. Delirium is a complex set of symptoms that fluctuate within a 24-hour period. Clinical research has helped articulate the subtleties of delirium during the past 2 decades. If nurses have not been explicitly taught the nuances of how delirium is manifested in older adults, they cannot be expected to readily recognize it at the bedside.

Measuring nurse recognition of delirium in these studies proved to be more complex than previously thought. The directness and complexity of the measures for delirium, as well as the design and settings, differed. With the exception of one, all of the studies reported low rates of nurse recognition of delirium, implying nurses have a lack of knowledge. Subsequently, what are nurses recognizing? They recognize that their patients are in distress, that they are confused, that they are exhibiting inappropriate or different behavior, and that they need help. Without knowledge of a template or framework in which to place these symptoms, nurses will not progress to actually recognizing delirium.
Comparison of a chart-based method for identification of delirium with DSM-III

Nurses charted about the cognitive status of patients but never used

Prospective com

Nurses identified delirium in only 19% of observations and 31% of pa

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D

Prospective

Two prospective

50% nurse recognition of delirium.

JOGNonline.com

DSM-IV

At least two signs of confusional state were recorded by nurses in

Comparison I: Physicians documented 24 of 111 (21.6%) patients as

Two prospective samples:

The sensitivity of the various domains required to diagnose delirium

Nurses recognized 26% of patients with delirium.

4

Case vignettes

N

Quasi-experimental

Design/Method

Evidence

Gradea

Gustafson et al. (1991), Sweden

Two prospective samples:

age ∊ 65; n = 111 and n = 57

Two retrospective samples:

age ∊ 65; n = 66 and n = 68

DSM-III

Two prospective clinical studies

C2

Morency et al. (1994), United States

N = 325, age ∊ 65, in Boston hospital

DSM-III

Prospective observational

C2

Bowler et al. (1994), United Kingdom

N = 201, age ∊ 60

DSM-III

Census/questionnaire (two stage)

D

Eden & Foreman (1996), United States

N = 1, 69-year-old man

DSM-IV

Case study

D

Inouye et al. (2001), United States

N = 797, age ∊ 70

DSM-III

Prospective comparison of nurse and researcher ratings

C2

Milisen et al. (2002), Belgium

N = 55, age ∊ 65, convenience sample from two trauma units

DSM-III

Retrospective chart review

C2

Young & George (2003), United Kingdom

N = 211, age ∊ 65, 18.5% from institutions

DSM-IV

Quasi-experimental intervention study

C2

Laurila et al. (2004), Finland

N = 219, age ∊ 70, 40.2% with dementia, 35.2% with delirium, and 81.3% living at home

DSM-IV

Point prevalence

C2

Inouye et al. (2005), United States

N = 919, age ∊ 70

DSM-III

Prospective validation

C2

Fick et al. (2007), United States

N = 29 medical-surgical nurses from Georgia

Case vignettes

Case vignettes

D


a Evidence grades ranged from A (at least one meta-analysis, systematic review, or randomized controlled trial rated as 1++ and directly applicable to the target population or a systematic review of randomized controlled trials or a body of evidence consisting principally of studies rated as 1+ directly applicable to the target population and demonstrating overall consistency of results) to D (evidence level 3 or 4 or extrapolated evidence from studies rated as 2+).

b Quality score was determined using the Modified Scale to Assess Quality of Studies. Scores range from 0 (low quality) to 16 (high quality).
There were several limitations of this review, namely, the heterogeneity of studies reviewed, weak study designs of some of the research, and varying methods of assessment of delirium and dementia. Although the patient was most often the unit of measurement, describing both patient and nurse populations would enhance these studies.

**TRANSLATING DELIRIUM RECOGNITION INTO PRACTICE**

What factors make it difficult to translate nurse recognition of delirium into practice? This review of the literature uncovered some of these barriers. For nurses to recognize delirium, they need time with patients, knowledge of the key features of delirium, an objective instrument to guide their assessment and documentation of delirium, and the support of leadership within the organization.

The studies in this review range in date from 1991 through 2007. Despite almost 2 decades of research, the rates of nurse recognition are still poor. It is imperative we act now to improve nursing practice in this area. Recommendations for practice are needed at several levels, including delirium assessment education, improved nurse-nurse communication, changes to the healthcare system, and the use of computerized decision support. In addition, we recommend wide implementation of delirium position statements and practice protocols. Several guidelines promoting routine cognitive assessment have been published; some suggest assessment of mental status should be the sixth vital sign (Australian Society for Geriatric Medicine, 2006; Dharmarajan, 2007; Flaherty et al., 2007; Potter, George, & Guideline Development Group, 2006).

**Education**

Three major nursing audiences are of concern: nursing students, nursing faculty, and practicing nurs-
KEYPOINTS

NURSE RECOGNITION OF DELIRIUM


1. These studies suggest nurses are missing key symptoms of delirium and appear to be performing only superficial mental status assessments.

2. Although related, the concepts of nurse knowledge of delirium, nurse recognition of delirium, and nurses’ assessment and documentation of delirium in older adults are different.

3. If nurses have not been explicitly taught the nuances of how delirium is manifested in older adults, they cannot be expected to readily recognize it at the bedside.

4. For nurses to recognize delirium, they need time with patients, knowledge of the key features of delirium, use of an objective instrument to guide assessment and documentation, and the support of leadership within the organization.

es. Nearly 60% of newly licensed nurses care for older adults ages 65 to 85, and more than 22% care for the adult population older than age 85 (Smith & Crawford, 2004). Progress is being made. From 1999 to 2002, newly licensed nurses reported gaining more clinical experience in nursing homes, home health care, rehabilitation, and critical care—all settings that typically host a higher percentage of older adults (Smith & Crawford, 2004). There are existing recommended guidelines for including geriatric nursing in baccalaureate nursing curricula, which is a start, but these recommendations are not mandatory (American Association of Colleges of Nursing & The John A. Hartford Foundation Institute for Geriatric Nursing, 2000).

One cannot assume bedside nurses will seek out, read, and incorporate into practice new information from research articles. Offering concise, accurate segments of knowledge may potentially reach the nurses who are caring for the older adult population. Examples of educational resources are the Try This: Best Practices in Nursing Care to Older Adults series provided by The John A. Hartford Foundation Institute for Geriatric Nursing (http://www.hartfordign.org/resources/education/tryThis.html) and the Building Academic Geriatric Nursing Capacity Web site (http://www.geriatricnursing.org/collaborative/hgni.asp), which highlights the Hartford Geriatric Nursing Initiative, created collaboratively by the Hartford Institute, the American Academy of Nursing, and the American Association of Colleges of Nursing.

Communication and Use of Information Technology

Because delirium has a fluctuating course over a 24-hour period and often includes a change in cognition or the development of a perceptual disturbance, routine cognitive assessment and nurse-nurse communication is critical in early recognition of delirium. First, nurses must understand the relevance of performing the cognitive assessment on every shift, then become skilled at interviewing the patient, and finally, understand and follow through with consistent communication of the assessment findings (Eden & Foreman, 1996). Intershift report is a hand-off point when nurses could inadvertently omit or miscommunicate information. Intershift report maintains the primary function of oral communication of the patients’ pertinent information, with a goal of seamless quality of care for patients (Bourne, 2000; Kerr, 2002).

These points are valid and well taken but are worthless if the information transferred at the change of shift does not effectively inform oncoming nurses of pertinent data needed to provide quality patient care (Bourne, 2000). Communication and documentation will be enhanced with the regular use of a cognitive assessment instrument. Where electronic health records are available, a cognitive assessment instrument should be incorporated as an interactive component. Use of information technology to assess causes of delirium and manage the behaviors associated with delirium is currently being piloted by one of the coauthors (D.M.F.).

Health Care System

System variables that may influence nurses’ recognition of delirium include staffing, leadership, hospital culture, and degrees of interdisciplinary collaboration. Health care systems need to move toward adopting elder-friendly atmospheres, similar to past efforts to make children’s hospitals more “kid friendly.” Goals of this kind of effort should be to support the older adults to maintain independence by helping compensate for physical and cognitive losses, early detection and intervention, targeting return to the usual living space, open communication, support for end-of-life care, and respect and care for caregivers (Dvorsky & Petipas, 2007; McCutcheon, 2002). Service upgrades should include promotion of a multidisciplinary approach with access to a range of health care professionals, more intensive rehabilitation
services, a holistic approach to treatment, and recognition that older adults will have a longer recovery period—all of which involve a change in culture and leadership values within the organization (McCUTCHEON, 2002).

The studies reviewed in this article suggest nurses are missing key symptoms of delirium and appear to be doing superficial mental status assessments. This makes it difficult to distinguish delirium from other conditions common to older adults, such as dementia. At the health system level (EASTBROOKS, MIDODZI, CUMMINGS, & WALLIN, 2007), a well-known instrument such as the CAM should be adopted for universal use. The CAM assesses four features:

- Acute onset and/or fluctuating course.
- Inattention.
- Disorganized thinking.
- Altered level of consciousness.

A positive delirium screen using the CAM requires the first, second, and third or fourth features be present (INOUYE ET AL., 1990). The CAM has been used in a variety of settings and is amenable for use at the bedside.

Future Research

Clarifying the concept of recognition will facilitate future research. Is documentation of symptoms without confirmation that the nurse understands that the condition is delirium adequate to claim that the nurse has recognized delirium? Research on nurse recognition of delirium and management of delirium should occur across settings, including the community, home health care, and long-term care. Fick et al. (2007) reported that 21% of the nurses in the study attributed dementia and hypoaactive delirium superimposed on dementia to normal aging. This highlights the need to further research nurses’ attitudes toward older adults and confused older adults. Future research should also concentrate on how nurses approach mental assessment, exploring the factors that facilitate and hinder assessment.

SUMMARY

This systematic review is an important update on nurse recognition of delirium. Nurses do not properly assess, recognize, document, or communicate about older adults with delirium. Effective education and system improvements for nurses related to delirium in older adults will be the first step to address this problem and move toward earlier recognition of and improved management of delirium in this vulnerable population.

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