Delirium in Patients With Cancer: What Nurses Need to Know to Improve Care

Sharon LaFever, MS, RN, AOCN®, Angela Bory, RN, and John Nelson, PhD, MS, RN

Background: Delirium is a serious problem when caring for a patient with cancer in the hospital. Delirium causes major risks and concerns for patients, family members, and healthcare workers, and it often goes unrecognized and has many clinical manifestations.

Objectives: This article aims to evaluate whether a nursing educational program on the topic of delirium would increase the nursing staff’s knowledge and confidence in managing patients with delirium.

Methods: A repeated-measures research design using general linear modeling was used for this study. An evidence-based delirium protocol and an educational session were developed for the nursing staff on an inpatient medical-surgical oncology unit. The nurses attended a delirium educational session to learn about risk factors, prevention, assessment, and management of delirium, as well as the use of the delirium protocol.

Findings: The nursing educational program on the topic of delirium increased the nursing staff’s knowledge from 69% to 86%, and overall confidence in managing patients with delirium increased from 47% to 66%. This study confirms the benefits of delirium education in the inpatient medical-surgical oncology setting.

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Staff at a Catholic community teaching hospital experienced challenges related to the perceived increase in the number of patients with delirious states manifested by profound confusion and agitation. Staff expressed concern for patient and staff safety when patients were experiencing extreme cases of delirium. The staff felt that patients with cancer were at higher risk for delirium than other medical-surgical units and that the problem needed to be addressed. Conversations among staff raised the question of how to identify patients at risk for delirium to permit early interventions prior to the crescendo of agitation in the acute care setting.

Previously, the nursing practice on the inpatient medical-surgical unit did not include a tool for routine assessment of delirium. The question was posed: Could interventions for early identification of delirium enhance the care experience for patients and staff? This question led to the exploration and development of an evidence-based practice (EBP) project targeted on improvement of the care of patients prior to and during episodes of delirium. The project team was led by the oncology clinical nurse specialist (CNS) and staff nurses on the unit.

The first step of the project was a review of the literature to identify best practice for care of the patient at risk for or experiencing delirium. The literature search was focused on projects conducted by other institutions to address the issue of delirium. Particular attention was paid to what measures were used within institutional projects to integrate interventions and data into best practices within clinical care. The four-item short Confusion Assessment Method (CAM) was selected as the most useful tool for assessing delirium and identifying patients with delirium because it can be completed in less than five minutes, has been validated in hospitalized patients who are aged 65 years or older, can be used for screening or diagnosis, and was...
available to use for nursing documentation in the hospital's electronic health record. CAM includes questions related to acute onset of mental status or fluctuating course, inattention, altered level of consciousness, and disorganized thinking or behavior (Inouye et al., 2014). Then, the project team developed a delirium protocol, based on the results of the literature review and experiential wisdom for practicality, to assist staff in identifying patients at risk for delirium. This included using the CAM assessment and implementing interventions for the prevention and management of delirium. The proposed study was reviewed and approved by the institutional review board at St. Agnes Hospital in Baltimore, Maryland, in March 2011.

The study sought to answer several research questions. This article discusses the first research question: Does the implementation of a delirium education program increase RNs' knowledge and confidence in caring for patients on a medical-surgical oncology unit? The other research questions included the following.

• To what extent is a delirium protocol implemented following a nursing education program?
• What is the impact on patient care of implementation of a delirium protocol on a medical-surgical oncology unit?
• What is the nursing unit’s baseline for the prevalence and incidence of delirium?

Significance of the Problem

Delirium is a widespread problem throughout many hospitals and causes significant problems in the cost and delivery of nursing care (Breitbart & Alici, 2011). Delirium has costs amounting to more than $182 billion in the United States, as well as 25%-33% rates of associated hospital mortality (Inouye et al., 2014). Although often unrecognizable early in its onset when manifestations are mild, delirium may be reversible, and identifying and treating it in the early stages is crucial. Failure to identify delirium in the early stages of onset contributes to significant morbidity and mortality (Inouye et al., 2014).

Delirium is identified in 14%-55% of hospitalized patients with cancer (Folstein, Fetting, Lobo, Niaz, & Capozzoli, 1984; Levine, Silberfarb, & Lipowski, 1978; Tuma & DeAngelis, 2000). Massie and Holland (1987) identified delirium as the second most common psychiatric diagnosis in patients with cancer. As many as 90% of patients with advanced cancer experience delirium at the end of life (Bruera et al., 1992; Lawlor et al., 2000; Massie, Holland, & Glass, 1983; Minagawa, Uchitomi, Yamawaki, & Ishitani, 1996; Morita, Tei, Tsunoda, Inoue, & Chihara, 2001). Age, advanced illness, comorbidity, and preexisting cognitive impairment increase the risk of delirium, which indicates that older patients with cancer are particularly susceptible (Bond, Neelon, & Belyea, 2006; Close & Long, 2012). Oncology nursing staff have identified delirium as an important clinical concern (Neufeld et al., 2011).

Literature Review

Delirium, an acute decline in attention and cognition, is a common life-threatening and potentially preventable clinical syndrome. Rarely is delirium caused by a single factor; rather, it is a multifactorial syndrome, resulting from the interaction of vulnerability on the part of the patient and the addition of hospital-related insults. Delirium often goes unrecognized and has many clinical manifestations. Hyperactive (e.g., restlessness, hypervigilance, agitation, hallucinations, delusions) and hypoactive (e.g., psychomotor retardation, sedation, lethargy, reduced awareness to surroundings) subtypes exist, but patients often fall somewhere between the extremes (Breitbart & Alici, 2011; Tardiff, 2009). Many causes of delirium are short-term problems that can be treated (e.g., infection, medications), which corrects the delirium. Other episodes of delirium may continue for weeks, months, or years (Bond & Neelon, 2008).

Substantial progress has been made in the understanding and prevention of delirium, but the translation of this progress into clinical practice has been slow. Rudolph et al. (2011) used a chart abstraction tool designed to assess delirium risk in older medical patients. The study noted that a greater number of delirium risk factors was associated with a greater rate of overall delirium. The results of this retrospective study revealed the prevalence of unrecognized delirium risk and supported the need for educational and clinical interventions to improve the prevention, assessment, and identification of delirium (Rudolph et al., 2011).

Multiple validated, delirium-specific assessment tools are available (Sendelbach, Guthrie, & Schoenfelder, 2009). Some instruments, such as CAM, are diagnostic only and used primarily for screening (Bush & Bruera, 2008). A systematic review of the use of CAM by Inouye, Van Dyck, and Alessi (1990) revealed that CAM has helped to improve the identification of delirium. The review also recommended training users for optimal effectiveness in detecting confusion and delirium. Not all cases of delirium can be picked up by CAM alone; therefore, more studies are needed to optimize use of CAM and improve the ability of nurses and physicians to identify and manage delirium (Wei, Fearing, Sternberg, & Inouye, 2008).

A lack of robust information exists on prevention of delirium in hospitalized patients (Siddiqi, Holt, Britton, & Holmes, 2007). The National Institute for Health and Care Excellence (NICE, 2010) released a guideline that addressed diagnosis, prevention, and management of delirium. Some groups of patients are at higher risk for delirium than others, and it may make sense to target delirium prevention to these groups (O’Mahoney, Murphy, Akunne, & Young, 2011).

The NICE (2010) guidelines stated that early recognition, elimination or correction of underlying causal factors, and general and supportive measures are essential to the current management of delirium. However, the effectiveness of interventions is inconclusive. Only six studies were eligible for data analysis to answer the clinical question: “What are the most clinical and cost effective multicomponent interventions for treating people with delirium in the hospital?” (NICE, 2010, p. 481). Evidence provided by NICE’s (2010) data analysis suggested that enhanced treatment strategies are more effective than usual care for people with delirium, but low-quality evidence was insufficient to recommend a particular intervention. NICE (2010) provided recommendations based on the principles of the multicomponent interventions and clinical expertise. A future research recommendation included asking the question: “Does an education programme for staff improve the recovery
from delirium in patients in hospital compared with an education leaflet or usual care? “(NICE, 2010, p. 510).

Although the literature on the topic of delirium has grown, a need for further research still exists. Little evidence was found specific to (a) the entire population of adult inpatients with cancer, (b) delirium risk identification tools for use on admission, or (c) nursing protocols with interventions to prevent or manage delirium that are easy to use in a busy inpatient oncology setting. This study was designed to address these practical concerns when working with inpatients with cancer at risk for or with delirium.

Methods

This research study was designed to answer the following question: Does the implementation of a delirium education program and protocol increase RNs’ knowledge and confidence in caring for patients on a medical-surgical oncology unit?

A repeated-measures research design examining the difference in knowledge from pretest to posttest, and at 11 months was used in the current study. An evidence-based delirium protocol and educational session were developed for the nursing staff with the following objectives.

• Patients admitted to the unit had a delirium risk assessment conducted within 24 hours of admission.
• The short CAM delirium assessment was performed on admission and every 12 hours.
• Delirium prevention and management interventions were implemented and documented.

The nurses on the inpatient medical-surgical oncology unit attended a two-hour delirium educational session to learn about risk factors, prevention, assessment, and management of delirium. The delirium educational sessions were developed and taught by the study investigators. Once all staff members were educated, the delirium protocol was implemented on the unit.

The delirium knowledge test collected data regarding nursing confidence and knowledge before and after the delirium protocol education. At the beginning of the educational session, each nurse was given a delirium pretest to complete. In the next step, the educational session was conducted. After the educational session, each nurse was given the delirium post-test to complete. All of the nurses who attended the education program repeated the delirium knowledge test again at 11 months after the educational session was completed.

Levene’s statistic was used to assess for equality of variance. Skewness and kurtosis were used to assess for normality of distribution. After assessing assumptions were not violated, data were analyzed using general linear modeling repeated measures to assess within-subject change over time.

Sample and Setting

The study was conducted on an inpatient medical-surgical oncology unit at a 276-bed Catholic community teaching hospital. The 24-bed inpatient oncology unit cares for adult patients with a broad range of medical and surgical oncology diagnoses from the time of initial diagnosis through active treatment, follow-up, and end-of-life care. The unit’s population of patients with cancer varied from 50%-100% (averaging 75%) of the patients on the unit, with an overflow of other medical-surgical patients.

Participants for the study included all 23 of the RNs working on the unit, not including the three coinvestigators. Nursing participants had a diverse number of years of experience, ranging from newly hired to more than 30 years of nursing. All 23 RNs were AA and BSN prepared, and four had oncology certification (OCN®).

Procedures

The delirium knowledge test was developed by the current authors and validated by 15 nurses not involved in the study. The 12-item delirium test included 10 items measuring knowledge and 2 measuring nurse confidence.

### TABLE 1. 12-Item Delirium Knowledge Test With Various Scoring Used to Measure Nursing Knowledge and Confidence

<table>
<thead>
<tr>
<th>Number</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A vignette was provided describing a patient with delirium, and respondents were asked to identify eight risk factors.</td>
</tr>
<tr>
<td>2</td>
<td>A vignette was provided, and respondents were asked to decide whether the patient was experiencing delirium or dementia.</td>
</tr>
<tr>
<td>3</td>
<td>Respondents were asked which delirium assessment was used by their hospital.</td>
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<tr>
<td>4</td>
<td>A vignette was provided describing a patient with delirium, and respondents were asked to identify five risk factors.</td>
</tr>
<tr>
<td>5</td>
<td>Respondents were asked what the major components of the Confusion Assessment Method were.</td>
</tr>
<tr>
<td>6</td>
<td>Four options were provided in a multiple-choice question to define inattention, which is asking the patient to spell a word backwards.</td>
</tr>
<tr>
<td>7</td>
<td>Respondents were asked to identify four of six options to identify an intervention that would help lessen the chance of developing delirium.</td>
</tr>
<tr>
<td>8</td>
<td>Five options were provided in a multiple-choice question to define delirium.</td>
</tr>
<tr>
<td>9</td>
<td>Respondents were asked to select causes of delirium in patients with cancer.</td>
</tr>
<tr>
<td>10</td>
<td>Respondents were asked to report “true” or “false” when asked if delirium was a frequent neuropsychiatric condition of terminally ill patients with cancer.</td>
</tr>
<tr>
<td>11</td>
<td>Respondents were asked to rate their confidence in caring for patients with delirium on a five-point Likert-type scale ranging from 1 (not confident) to 5 (very confident).</td>
</tr>
<tr>
<td>12</td>
<td>Respondents answered “yes” or “no” when asked if they felt confident in providing patient care to a patient load that included one patient at high risk for delirium.</td>
</tr>
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</table>

Note. Questions 1–10 were summed for a total delirium knowledge score. Questions 11–12 measured confidence.
All of the nurses working on the unit attended a two-hour delirium educational session covering the following educational objectives.

• Welcome nurses to class and have those in attendance take the pretest.
• Describe the scope of the delirium problem in hospitalized patients.
• Understand the risk factors and causes of delirium.
• Explain and demonstrate how to use the short CAM assessment.
• Explain the delirium nursing research study and the purpose of the delirium protocol.
• Understand proper use of the delirium protocol.
• Evaluate the class, and have those in attendance take the post-test.

The unit secretaries and patient care technicians on the unit were also educated about the delirium protocol and study and why their participation was needed. The delirium protocol was followed on the unit for 11 months. Repeat testing of the nurses participating in the study was done 11 months after the educational session to measure retention of knowledge and long-term effect of the educational session on nursing confidence.

A 12-item delirium knowledge test was used with various scoring (e.g., different scoring for vignettes, multiple choice, true or false items, Likert-type scales), and total scores were tabulated for knowledge and confidence. Questions were designed to measure knowledge and confidence of nurses caring for patients with delirium (see Table 1).

**Data Analysis**

The study used repeated measures using general linear modeling. The analysis of variance procedure was used to assess for assumptions of equality of variance.

**Results**

Providing a nursing educational program on the topic of delirium increased the nursing staff’s knowledge from 69% to 86% and overall confidence in managing patients with delirium from 47% to 66%. Confidence with patient load that includes a patient with delirium increased from 50% to 83% (see Figures 1, 2, and 3). Although some of the nursing knowledge about delirium decreased 11 months following the class from 86% to 81%, they still maintained a significant increase in their overall knowledge of delirium.

Nursing confidence in caring for patients with delirium continued to increase over time following the delirium protocol implementation from 66% to 69% (p = 0.0002) (item 11) and 83% to 85% (p = 0.0004) (item 12). Although these results are encouraging, they also show that improvements can be made in maintaining nurses’ knowledge and building confidence in managing patients with cancer with delirium.

General linear modeling repeated measures revealed a statistically significant difference within subjects when comparing dataset 1 and 2 (p < 0.001) and dataset 1 and 3 (p < 0.001) but not between dataset 2 and 3. The greatest change was between dataset 1 and 3.

**Discussion**

For this study to be completed, the unit staff needed to buy in to participating in the research study and implement the delirium protocol. All members of the nursing team (i.e., nurses, patient care technicians, unit secretaries, nurse managers, and oncology CNS) had their roles to play in making the project successful.
The demonstrated increase in knowledge and confidence in managing patients with cancer at risk for or with delirium is still evident in the staff that participated in the research study. A number of previous staff left the hospital, and new staff members have been hired; therefore, re-educating and reinforcing knowledge of delirium on the unit is necessary.

Frontline nursing staff members working on a busy inpatient unit are capable of identifying a clinically relevant problem, such as delirium, and conducting an EBP project and nursing research study. With the support of nursing management, a CNS to mentor the research process, and a consultant statistician for data analysis, projects can be successful in improving patient care on the unit.

This study on delirium has been very helpful to the authors’ hospital at large. Sharing the research study progress at the Nursing Research Council, as well as speaking and poster presentations, has helped to encourage the confidence for other nursing research projects to be initiated by staff nurses with the help of mentors. The attention to delirium has helped increase awareness of the problem, and the hospital is now involved in a project to use CAM to assess for delirium in all patients aged 60 years or older.

This study reveals a sustained improvement in confidence in caring for patients with delirium, as evidenced by the increased and sequential improvement in confidence score. The authors have seen the score improve from before to after the class, but the confidence continued to improve to the third measure 11 months after the class.

Limitations

The time for writing, completing, and entering data for the study was lengthy (three years) because the staff nurses were novice investigators and only had several hours each month to work on the study. The members participated fully, but two of the staff investigators left the study because of attrition. The remaining staff nurse and the oncology CNS continued for the duration of the study. The unit also had four different nurse managers during the course of the study, and they all were supportive of the nursing research.

All of the data collection occurred in paper format except for CAM, which presented problems with documentation. The staff was accustomed to doing the majority of documenting in the electronic health record. Encouraging the nurses to document on paper for the study required ongoing vigilance and reminders by the investigators. More data could have been collected if all of the forms had been in the electronic health record. The nursing staff administered the delirium risk assessment on admission but did not always administer the CAM assessment every 12 hours in the electronic health record. Only 68% of the high-risk patients had any documentation on the paper intervention flow sheets that were kept in the patients’ bedside notebook.

Implications for Nursing

This study confirms the need for and effectiveness of delirium education in the inpatient oncology setting. Even experienced nurses may lack confidence when caring for challenging patients with delirium. Although a delirium educational session was able to initially increase nursing knowledge and confidence, as expected, starting the delirium protocol after the education also played a role in maintaining the nurses’ knowledge and building their confidence when caring for patients. The delirium risk assessment tool used in this study (CAM) proved easy for clinical use, but additional testing is needed to establish reliability and validity in patients with cancer. Computerization of the paper documentation tools (i.e., risk assessment and intervention flow sheets) would have made them easier to use and would have helped to capture more data.

The interventions in this study, the educational session and implementation of the tool, were useful in identifying patients at higher risk for delirium on the inpatient oncology unit. Delirium education is important for nurses caring for inpatients with cancer who are at risk for delirium. Most importantly, preventing delirium in high-risk patients is easier than treatment after delirium has occurred. Nurses, through their close interactions with patients, have the opportunity to monitor and

Implications for Practice

- Acknowledge the serious problem of delirium in the population of inpatients with cancer that negatively affects patients, family members, healthcare workers, and healthcare costs.
- Learn about delirium and the ways to assess risk and prevent and manage symptoms to increase knowledge and confidence in managing patients at risk for or experiencing delirium.
- Take part in projects to assist, improve upon, and research the care of patients with cancer who are at risk for or experiencing delirium.
intervene with this often underrecognized patient problem. Nurses can provide education resources to patients, such as information from the ICU Delirium and Cognitive Impairment Study group (http://bit.ly/1CcwrAI) and Mayo Clinic (http://mayoclinic.org/1hb6wR6).

Conclusion

An increase in patients with delirium on the inpatient oncology unit triggered an EBP project focusing on delirium, which led to writing a nursing research study that involved implementation of a newly developed delirium protocol and assessment tool. The research study included a nursing educational program on the topic of delirium that significantly increased the nursing staff’s knowledge and overall confidence in managing patients with delirium. Although the results are encouraging, room for improvement exists.

This project has been an excellent opportunity for the oncology CNS to coach and mentor staff with hands-on learning of the EBP and the research process. The staff presented four posters and two podium presentations about this study, which has helped to build professional skills and confidence. Oncology nurses must be willing to champion best practices for their patients experiencing the distress of delirium. Many opportunities exist to assist, improve on, and research the care of patients with cancer who are at risk for or experiencing delirium.

References


References


