Multifaceted Delirium Education Project Brief

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Abstract

Background
Delirium in hospitalized adults 65 years and older contributes to increased hospital-acquired conditions, morbidity and mortality. Nurses are instrumental in detecting and reporting delirium yet the condition often goes unrecognized. The aim of this project was to improve nurses’ knowledge and recognition of delirium using multifaceted delirium education.

The setting is a 55-bed orthopedic/neuroscience/trauma unit in a community teaching hospital.

Methods
Evidence supports use of a multifaceted delirium education program to improve delirium knowledge and recognition. Delirium documentation variables and a pre- and post intervention questionnaire were used to assess improved recognition.

Intervention
Multifaceted delirium education was provided to nursing staff and included a computer-based training module, one-hour didactic in-services, a delirium screening tool, and bedside coaching to address content areas of epidemiology, assessment, prevention, and management.

Results
There were significant improvements in documentation of delirium risk, delirium screening, use of nonpharmacological interventions, and delirium specific plans of care post-education.

Conclusions
Use of a multifaceted education program in this project improved nurses’ recognition of delirium as evidenced by improved documentation of delirium care. Additional work is needed to improve accuracy of the delirium screening and standardize delirium protocols.
Delirium, an acute disorder with decline of attention and cognition, is a clinical complication for many hospitalized older adults and is characterized by an acute onset and fluctuating course of confusion and disorientation (Inouye, Westendorp, & Saczynski, 2014). It is a costly, under-recognized, and often fatal condition for the population of patients 65 years and older (Greer et al., 2011; Inouye, Foreman, Mion, Katz, & Cooney, 2001; Leslie, Marcantonio, Zhang, Leo-Summers, & Inouye, 2008). The prevalence of delirium on admission in general and geriatric medical units has been reported to be as high as 18 to 35% (Inouye et al., 2014). Patient outcomes associated with delirium include increased morbidity, mortality, and hospital acquired conditions such as falls (Inouye, 2006; Inouye et al., 2014; Leslie & Inouye, 2011). The estimated yearly cost to care for one patient with delirium, pre- and post-hospitalization, ranges from $60,516 to $64,421 (Leslie et al., 2008).

Nurses are integral to detecting and reporting delirium symptoms because they are direct caregivers, yet the condition often goes unrecognized and therefore is poorly managed (Baker, Taggert, Nivens, & Tillman, 2015). Due to the associated health care burden and cost, early delirium recognition, prevention, and management are needed to improve safety and quality of care for this vulnerable population. Locally, in the project unit of an acute care community teaching hospital, clinical delirium is abundantly evident. However, the rate of hospital-acquired delirium reported for the health system and the project hospital is less than 2% annually. Relative to the reported rate in the literature, this rate indicates that delirium at the local level is under-recognized and under-reported. The need to educate nurses to recognize, prevent, and manage delirium was identified through review of this data, plus discussions with nurses and review of delirium documentation in the project unit,. The Johns Hopkins Nursing Evidence Based Practice (JHNEBP) model “Practice-Evidence-Translation” (PET) process provided the framework for
this project (Dearholt, 2012). Institutional review board (IRB) approval was granted for the proposed project by the project organization and York College of Pennsylvania. The evidence synthesis and translation was guided by the practice (PICO) question: “Does implementing a multifaceted delirium educational program for nurses result in increased delirium recognition as evidenced by documentation of delirium risk factors, delirium screens, nonpharmacological interventions, and initiation of delirium plans of care for patients 65 years and older on a medical/surgical unit?”

**Summary of the Evidence**

Available knowledge suggests that education programs regarding delirium recognition and management are needed and are a key priority in delirium clinical practice guidelines (American Geriatric Society [AGS], 2015; Flagg, Cox, McDowell, Mwose, & Buelow, 2010; Inouye et al., 2001; National Institute for Health and Care Excellence [NICE], 2010). Evidence regarding use a multifaceted education program to improve nurses’ knowledge and recognition of delirium is strong and compelling (Gesin et al., 2012; Lundstrom et al., 2005; Mudge, Maussen, Duncan, & Denaro, 2012; Ramaswamy et al., 2011; Tabet et al., 2005; Vidan et al., 2009; Wand et al., 2013; Yanamadala, Wieland, & Heflin, 2013). This method includes a combination of didactic lecture, web-based and visual resources, and case studies. Other strategies recommended as part of the education program are a bedside coach/resource person (Gordon, Melillo, Nannini, & Lakatos, 2013; Hshieh et al., 2015; Mudge et al., 2012; Wand et al., 2013) and a delirium-screening tool (Middle & Miklancie, 2015). Multifaceted education improved staff knowledge and recognition of delirium, delirium screening and documentation, and adherence to delirium protocols (Gesin et al., 2012; Layne, Haas, Davidson, & Klopp, 2015; Ramaswamy et al., 2011; Vidan et al., 2009; Wand et al., 2013; Yanamadala et al., 2013).
Implementation Protocol

A multifaceted delirium education program was implemented in a 55-bed orthopedic, neuroscience, and trauma unit during the month of September 2015. The program included the Nurses’ Knowledge of Delirium Questionnaire (NKDQ), a computer-based training (CBT) module, a one hour in-service program, delirium protocol handouts, a bulletin board, “B.E.A.T. Delirium” mnemonic, and bedside coaching by the unit clinical nurse specialist who was the project leader. Nursing staff were invited to voluntarily participate in the education program. All registered nurses (RNs) were asked to complete the NKDQ, CBT, and in-service program. Nursing assistants (NAs) were asked to attend an in-service program only. Of the 77 RNs, 69 (90%) participated in at least one portion of the educational intervention. Of the 25 NAs working in the unit, 12 attended the one-hour in-service program (48%). Two hours of education time was granted for each RN and one hour was granted for each NA. The budget for the project is found in the Appendix.

Project Implementation Strategies with Analysis of the Process

The aim the project was to use a multifaceted education program to improve nurses’ recognition and management of delirium in the hospitalized older adult. Measures chosen to study the processes and outcomes were the NKDQ and documentation evidence of delirium risk, screens and nonpharmacological interventions from patient electronic medical records (EMRs). The NKDQ by Hare, Wynaden, McGowan, Landsborough, & Speed (2008) measured improvement in knowledge and recognition of delirium pre- versus post-education.

Documentation measures were collected concurrently from the EMR on all patients 65 years and older admitted to the project unit post-education, October through December 2015, and compared to the same measures collected for the same months in the previous year. Measures included documented baseline change in cognition, mobility, and activities of daily living.
(ADLs) on admission, delirium screen on admission and twice daily, delirium risk factors, nonpharmacological interventions implemented, and initiation of a delirium specific plan of care. Patient demographics included patient age, gender, dementia diagnosis, and pre-hospital place of residence (non-healthcare facility such as home versus skilled healthcare facility).

**Analysis and Outcomes**

There were 729 patient records reviewed for the pre- and post- intervention months. Descriptive statistics were conducted on all measured variables. Between groups comparisons were made for all documentation variables, delirium incidence, and patient demographics using Chi-square tests with significance level set at $p < .05$. Independent samples t-tests were conducted for patient age comparison pre- to post- intervention groups, and pre-to post-NKDQ scores (level of significance $p < .05$). Mean age comparison between the two groups was similar as evidenced by independent samples t-test p-value of $p = .1783$. Pre-and post-intervention patient demographics showed that the two groups were similar in regard to gender ($p = .637$), dementia diagnosis ($p = .788$), pre-hospital residence ($p = .909$), and cognitive changes on admission ($p = .132$ Chi square p-values). The only demographic variable with a significant $p$-value was the ADL/mobility change on admission ($p = .006$). This was attributed to the shift in the patient populations from orthopedic trauma to neuroscience patients between pre- and post-intervention time periods.

Statistically significant increases in delirium documentation frequency across all variables suggests that the multifaceted education program for nurses improved recognition of delirium. There were significant improvements in all documentation variables (Chi-square $p$-values): delirium risk ($p = .004$), delirium screens ($p < .0001$), plans of care initiated ($p < .0001$), and nonpharmacological interventions implemented ($p < .0001$). There were significant increases in NKDQ knowledge ($p = .028$), recognition ($p = .001$), and overall scores ($p = .004$); however,
results must be interpreted with caution due to the low number of respondents post-intervention (Independent samples t-test p-values). The incidence of delirium increased from 8% in 2014 to 10% in 2015 (Chi square $p = .6624$, level of significance $p < .05$). There was no significant difference noted in the delirium incidence reported post-intervention in this project. Delirium incidence was measured using encephalopathy codes and coding is a physician responsibility. Education in this project was focused on improving nurses’ knowledge; therefore, this result was foreseen.

**Barriers Encountered and Solutions**

Even though there was staff interest and leadership support for the project, the education was not mandated, and some nurses did not participate in the entire program as intended. Bedside coaching assisted in application of the education in practice. Due to EMR reports available, two different methods were used for attaining patient records. For the retrospective chart review, records were obtained through reports of patients discharged. Reports for concurrent patient records were generated through EMR reports for admissions. To account for the difference, efforts were made to standardize the way data were collected. To preserve fidelity to the measurement method, one miss in the documentation measure was counted as “no” not complete.

The multifaceted education intervention to improve nurses’ recognition and management of delirium is a needed first step to improve care for hospitalized patients 65 years and older. Results from the project suggest that system-wide dissemination of this education can further improve nurses’ knowledge, recognition, and management of delirium. Improving direct caregiver’s knowledge and recognition enhances preventive efforts and may reduce the morbidity and mortality associated with delirium (Inouye, 1998).


Appendix

B.E.A.T. Delirium Project Budget

**BEAT Delirium Project**

*Budget 3 years*

<table>
<thead>
<tr>
<th>Supply Costs</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
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<tr>
<td>Candy for class (3 boxes)</td>
<td>21.94 X 3</td>
<td>0.00</td>
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<tr>
<td>BEAT Delirium Pins (200)</td>
<td>73.09</td>
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<td>Activity Box Items</td>
<td>102.91</td>
<td>$100.00</td>
<td>100.00</td>
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<tr>
<td>Handouts</td>
<td>.02 X 60</td>
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<tr>
<td>Flyers</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>243.42</strong></td>
<td><strong>100.00</strong></td>
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<tr>
<th>Administrative Cost</th>
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<tr>
<td>Project Leader Time</td>
<td>50.00 X 1040</td>
<td>52,000.00</td>
<td>51.00 X 624</td>
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<tr>
<td>Organizational Learning Specialist</td>
<td>42.00 X 40</td>
<td>1,680.00</td>
<td>42.84 X 4</td>
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<td>Research Assistant</td>
<td>48.00 X 3</td>
<td>144.00</td>
<td>49.44 X 1</td>
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<tr>
<td>Registered Nurse (77): 2 hr. education time</td>
<td>35.00 X 2=70.00</td>
<td>5,390.00</td>
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<td>Nursing Assistant (25): 1 hr. education time</td>
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<td>375.00</td>
<td>15.30 X 25</td>
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<td><strong>Total</strong></td>
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<td><strong>35,176.20</strong></td>
<td><strong>35,879.53</strong></td>
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<th>Cost Avoidance</th>
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<th>2016</th>
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<tr>
<td>Avg Cost per Case of delirium incidence</td>
<td>62,468.50</td>
<td>65,841.5*</td>
<td>69,396.5*</td>
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<td>Total Cost of project</td>
<td>59,832.42</td>
<td>35,276.20</td>
<td>35,979.53</td>
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<td>Estimated Cost Avoided/year (by preventing 1 incidence of delirium)</td>
<td>2636.08</td>
<td>30,565.30</td>
<td>33,416.97</td>
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*average increase in PA health care spending/year (2%)