Using a Multifaceted Education Intervention to B.E.A.T. Delirium

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Abstract

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. Evidence supports multifaceted delirium education to improve delirium knowledge and recognition. A multifaceted delirium education intervention was provided to nursing staff in a 55-bed orthopedic/neuroscience/trauma unit in a community teaching hospital. The project aim was to improve nurses’ knowledge and recognition of delirium. Multifaceted education included a computer-based training module, one-hour didactic in-services, a delirium screening tool, and bedside coaching. Delirium documentation variables and a pre- and post intervention questionnaire were used to measure improved recognition. Use of a multifaceted education program improved nurses’ recognition of delirium as evidenced by statistically significant improvements in documentation of delirium risk ($p = .004$), screens ($p < .0001$), nonpharmacological interventions ($p < .0001$), and delirium specific plans of care ($p < .0001$).
Delirium, an acute disorder with decline of attention and cognition, is a clinical complication for many hospitalized older adults 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). Delirium occurrence in general and geriatric medical units has been reported to be as high as 29 to 64% (Inouye et al. 2014). Outcomes associated with delirium include increased morbidity, mortality, and hospital acquired conditions such as falls (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).

Problem Description

Nurses are key 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). Delirium is not recognized because of the fluctuating nature of the condition, and its overlap in clinical presentation with dementia (Inouye et al., 2001; Steis & Fick, 2012). The confusion associated with delirium is often attributed to the normal aging process or a dementia diagnosis.

Multiple authors indicate that opportunities for improvement in nurses’ knowledge about delirium exist, particularly regarding the predisposing factors for delirium (Fick, Hodo, Lawrence, & Inouye, 2007; Flagg, Cox, McDowell, Mwose, & Buelow, 2010; Hare, Wynaden, McGowan, Landsborough, & Speed, 2008). Assessment of nurses’ overall delirium knowledge and risk factor recognition shows that nurses have significant knowledge deficits in both areas.
(Baker et al. 2015). Delirium education and training for nurses is an immediate need, specifically education regarding key features seen during routine care such as fluctuations in attention, cognitive function, and levels of consciousness (El Hussein, Hirst, & Salyers, 2014; Inouye et al., 2001). 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 is less than 2% annually. Relative to the reported rate in the literature, this indicates that delirium at the local level is under-recognized and thus under-reported.

Due to the significant adverse patient consequences and associated financial burdens identified in the literature and locally, the need to educate nurses to recognize, prevent, and manage delirium was identified. A literature review and synthesis was conducted. The Johns Hopkins Nursing Evidence Based Practice (JHNEBP) model and its 18-step Practice Question-Evidence-Translation (PET) process provided the framework for this quality improvement project (Dearholt, 2012). The review and synthesis was guided by the practice (PICO) question: “Does implementing a multifaceted delirium education 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?”

**Literature Review**

Evidence suggests that education programs regarding delirium recognition and management are needed and are a key priority in delirium clinical practice guidelines (The American Geriatric Society [AGS], 2015; Flagg et al., 2010; Inouye et al., 2001; National Institute for Health and Care Excellence [NICE], 2010). Education is often part of a multi-
component delirium protocol and delivered through various methods including didactic, web-based, case studies, simulations, and multifaceted programs.

A multifaceted education program was described most frequently in the reviewed literature (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., 2014; Yanamadala, Wieland, & Heflin, 2013). This method includes a combination of didactic lecture, web-based and visual resources, and interactive case studies. 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., 2014; Yanamadala et al., 2013). Additional studies reported decreased incidence of delirium in intervention groups following multifaceted education programs (Lundstrom et al., 2005; Tabet et al., 2005; van de Steeg et al., 2014; Vidan et al., 2009; Wand et al., 2014).

Using a standardized delirium-screening tool in practice, plus specific education regarding how to use the tool were additional strategies to improve nurses’ recognition of delirium (Middle & Miklancie, 2015). Use of a screening tool improved nurses’ ability to evaluate a patient for delirium risk in other studies as well (Gesin et al., 2012, Gordon, Melillo, Nannini, Lakatos, 2013; Mudge et al., 2012; Sykes, 2012; Wand, et al., 2014).

Gordon and colleagues (2013) used didactic screening tool education plus a bedside coach to reinforce learning. The coach provided guidance, support, and encouragement in using the screening tool and documenting results. Chart review compared pre and post-education showed a statistically significant increase in documenting delirium screening results, behaviors, and cognitive status ($p = 0.00$). The coach’s monitoring of adherence to the delirium plan of care
(POC) improved implementation of delirium interventions and reduced delirium incidence (Gordon et al., 2013; Hshieh et al., 2015; Vidan et al., 2009; Wand et al., 2014).

The AGS (2015) recommends that delirium education for healthcare professionals focus on recognition, screening tools, risk factors, and both pharmacologic and nonpharmacologic prevention and management. Researchers have shown that nonpharmacological intervention use increased following multifaceted, didactic, and web-based education (van de Steeg, IJkema, Langelaan, & Wagner, 2014; Varghese, Macaden, Premkumar, Mathews, & Kumar, 2014; Vidan et al., 2009; Wand et al., 2014). Nonpharmacological interventions recommended include cognitive reorientation (AGS, 2015; Hshieh et al., 2015; Inouye, Foreman, Mion, Katz, & Cooney, 1999; NICE, 2010; Rivosecchi, Smithburger, Svec, Campbell, & Kane-Gill, 2015; Vidan et al., 2009), early mobility (AGS, 2015; Hshieh et al., 2015; Inouye et al., 1999; NICE, 2010; Rivosecchi et al., 2015; Vidan et al., 2009), adequate fluid and nutrition (AGS, 2015; Hshieh et al., 2015; Inouye et al., 1999; NICE, 2010; Rivosecchi et al., 2015; Vidan et al., 2009), adequate oxygenation (AGS, 2015; Hshieh et al., 2015; NICE, 2010; Rivosecchi et al., 2015), sensory adaptations (AGS, 2015; Hshieh et al., 2015; Inouye et al., 1999; NICE, 2010; Rivosecchi et al., 2015; Vidan et al., 2009), preventing constipation (AGS, 2015; Hshieh et al., 2015; NICE, 2010; Rivosecchi et al., 2015), medication review (AGS, 2015; Hshieh et al., 2015; NICE, 2010; Rivosecchi et al., 2015; Vidan et al., 2009), sleep enhancement (AGS, 2015; Hshieh et al., 2015; Inouye et al., 1999; NICE, 2010; Rivosecchi et al., 2015; Vidan et al., 2009), and pain management (AGS, 2015; Hshieh et al., 2015; NICE, 2010; Rivosecchi et al., 2015).

**Aim**

The purpose of this report is to present an evidence-based quality improvement (QI) project using a multifaceted delirium education program to improve nurses’ knowledge, recognition and nonpharmacological management of delirium in the hospitalized older adult.
Methods

Institutional review board (IRB) approval was obtained for the proposed EBP quality improvement project from the project organization and the college. The project aligned with the organization’s focus on quality and patient safety. There were no ethical concerns as the education intervention was designed to improve care. This education was not mandatory for nursing staff, and there were no consequences for not participating. Support for the project was obtained at the organizational and unit level from various stakeholders including nursing and medical leadership as well as nursing and rehabilitation medicine staff.

Context

The project unit was a 55-bed orthopedic, neuroscience, and trauma unit with 102 nursing staff members: 77 registered nurses (RNs) and 25 nursing assistants (NAs). The project leader was the unit’s adult-geriatric clinical nurse specialist. Nurses complete the Nursing Delirium Screening Scale (NuDESC) on admission and twice daily (Gadreau, Ganon, Harel, Tremblay & Roy, 2005). NuDESC is a psychometrically validated delirium-screening tool with a sensitivity and specificity of 0.857 (95% CI, 0.654-0.950) and 0.868 (95% CI, 0.727-0.943) respectively. It consists of a five-item scale screening for disorientation, inappropriate behavior, inappropriate communication, illusions/hallucinations, and psychomotor retardation. Each item is scored from zero to two based on the severity of the symptom. A score of 2 or greater identifies delirium symptoms. Many nurses commented that they did not understand how to perform the screen or what the score signified. This uncertainty was evidenced by inconsistent documentation of the screen, risk, interventions and plan of care.
Intervention

A multifaceted evidence-based delirium education program designed by the project leader was implemented during the month of September 2015. The program included a computer-based training (CBT) module, 12-one hour didactic in-service offerings, handouts, a bulletin board, “B.E.A.T. Delirium” mnemonic, and bedside coaching by the project leader. Nursing staff were invited to participate in the program. Participation was voluntary and continuing education credits were granted for completing the program. RNs were invited to complete the CBT and attend a one-hour didactic in-service program taught by the project leader. Nursing assistants were invited to an in-service program only.

The CBT and in-services included content regarding delirium risk factors, causes, signs and symptoms, and prevention and management measures. Content reflected topic and practice recommendations found in the literature (Allen et al., 2011; AGS, 2015; Gordon et al., 2013; Page, Kowlowitz, & Alden, 2010; Paquette, Bull, Wilson, & Dreyfus, 2010; Sykes, 2012). The NuDESC screen was reviewed as part of the CBT content, and participants applied the screen to case scenarios. There was a 25 question post-test including multiple choice and simulated documentation questions. Passing score for the post-test was 85%.

The “B.E.A.T. Delirium” mnemonic developed by the project leader was used as a reminder of steps to take when caring for a patient with or at risk for delirium (see Appendix A). The project leader designed button pins with the mnemonic and distributed pins and a candy bar as an incentive to each person attending the in-service. Pins and candy were also given to staff when consulting and collaborating with the bedside coach regarding a patient’s plan of care.

Pre- and post-intervention knowledge was assessed using the Nurses’ Knowledge of Delirium Questionnaire (NKDQ) developed by Hare and colleagues (2008). The questionnaire
was used with permission. Nurses were invited to complete the online questionnaire prior to attending an in-service or taking the on-line CBT. Four weeks following the educational offerings, nurses were again instructed to take the online questionnaire.

NKDQ is a non-validated tool used in at least 16 countries around the world and is part of a validation study in the U.K. (M. Hare, personal communication, April 17, 2015). It consists of nursing demographics as well as 14 questions each for delirium knowledge and recognition. Preliminary results for internal consistency and reliability co-efficients for the two main subsections with Kuder-Richardson formula were 0.66 for the knowledge section and 0.80 for the recognition section. Validation results are expected sometime in 2016 (M. Hare, personal communication, April 17, 2015).

Throughout project implementation, the project leader rounded as the bedside coach and served as a resource for staff. Progress toward completing the NKDQ and educational offerings was shared with the unit stakeholders through multiple venues including weekly emails, unit staff meetings, and face-to-face discussions.

**Measures**

Measures chosen to study the project processes and outcomes included the number of staff completing the education offerings, NKDQ scores, and documentation evidence from patient records. NKDQ pre- and post-intervention scores were analyzed as aggregate comparisons. Documentation measures were collected post-intervention during October through December 2015 and compared to the pre-intervention data from October through December 2014. Patient demographics included age, gender, dementia diagnosis, pre-hospital residence/origin (non-health care facility such as home versus skilled healthcare facility such as a hospital), and admission baseline assessment changes in cognition, mobility and activities of
daily living (ADLs). Documentation data included six measures answered “yes” (completed) or “no” (not done or not done completely): Delirium screen on admission, delirium screen twice daily, risk factors, nonpharmacological interventions, interdisciplinary plan of care initiated, and delirium incidence on discharge (by ICD 9/10 codes).

A baseline NuDESC delirium screen was completed as part of the nursing admission assessment. Delirium plans of care were recorded as completed when initiated. Twice daily with each NuDESC screen, nurses had the opportunity to document screen findings, risk factors, and nonpharmacological interventions used. For each measure, if one opportunity was missed, the measure was counted as “not met.”

Records were reviewed approximately 48 hours following admission. For this project, the leader worked with the informatics department (IT) to create an admission report from the EMR. This report was emailed to the project leader daily and contained patient admissions to the unit with a NuDESC screen completed within the past 48 hours. The project leader reviewed the report daily, collected data from the EMR, and hand entered data into an Excel spreadsheet. There were no variations in data recording and interpretation, and no missing data elements.

Delirium incidence was determined by the number of patients coded for the ICD codes for encephalopathy [metabolic, toxic, not otherwise specified (NOS), not elsewhere classified (NEC)] on discharge. Encephalopathy was used because it is the diagnosis that encompasses the constellation of symptoms known as delirium. Encephalopathy may be due to toxic (medications), metabolic (infections or physiological causes), or unknown factors (NOS or NEC).
Analysis

Only the project leader entered data into Microsoft Excel spreadsheets on a password-protected computer during chart reviews. Data were downloaded into MedCalc for analyses. RN participants entered NKDQ data directly into the questionnaire on the ReMark Office OMR software. These data were then downloaded into SPSS v. 18 for analyses.

Descriptive statistics were conducted on all measured variables from the EMR. Between groups comparisons were made for documentation variables, incidence, and patient demographics using Chi-square tests with significance level set prior to the project at $p < .05$. Independent samples t-tests were conducted for patient age comparison pre- to post- intervention groups, and pre-to post-NKDQ scores. Independent samples t-tests were used because respondents were not paired in the pre- to post- evaluation.

Results

Of 77 RNs in the unit, 69 (90%) completed either the CBT or in-service. Of the 25 full-time NAs, 12 attended the in-service program (48%). Thirty-one nurses (40%) completed both the CBT and in-service program. There were 729 patient records reviewed. The graph in Appendix B shows the comparisons between pre- and post-intervention group demographics. The age range was 65 to 99 years in both pre- and post-intervention groups with the mean age 80 years ($+/-.8.8$ years) in 2014, and mean age 79 years ($+/-.8.5$ years) in 2015. Groups were comparable with the exception of the difference in baseline change in ADLs and mobility ($p = .006$). There were fewer patients with documented change in this measure in 2015 when compared to 2014. This difference was attributed to the shift from orthopedic to neurological admissions with the growth of the stroke program in 2015. There were fewer orthopedic patients admitted with self-care altering injuries and morbidities.
Documentation frequency measures

Documentation of NuDESC screen on admission for both pre- and post-intervention was completed 100% of the time for both time periods. The NuDESC screen is required on admission for any patient 65 years and older. Therefore, it was expected that this measure was 100% complete. The graph in Appendix C shows the percent improvement in each categorical variable measured as well as the calculated Chi-square $p$-value (level of significance $p < .05$). There was a statistically significant improvement in all documentation measures.

NKDQ Pre-vs Post-Intervention Results

Fifty-three of 77 RNs (69%) working in the unit took the NKDQ pre-intervention. Twenty-one nurses completed the post-intervention NKDQ, however five respondents were excluded from the results. One respondent had not participated in any education, and four had taken the post-NKDQ only. The final number of respondents included in the post-intervention group was 16 (21%). There were statistically significant increases in knowledge, recognition, and overall scores (see Appendix D). Results must be interpreted with caution however due to the low number of respondents post-intervention.

Delirium Incidence

The percent of patients coded for encephalopathy on discharge increased from 8% (47 patients/532 total patients) in 2014 to 10% (47 patients/478 total patients) in 2015. The increase however was not significant as evidenced by the Chi square $p$-value $p = .662$ (level of significance $p < .05$).

Discussion

The significant improvements in delirium documentation across all variables demonstrated that multifaceted education improved nurses’ recognition of delirium and verified
findings reported by multiple authors (Gesin et al., 2013; Ramaswamy et al., 2011; Tabet et al., 2005; Wand et al., 2014; Yanamadala et al., 2013). Documentation was used to measure increased recognition since it reflects nurses’ observations and actions. Bedside coaching reinforced education and assisted with knowledge application in practice. There was an improvement in the percent of patients having nonpharmacological interventions documented; however, there was no measurement of whether these interventions were implemented, nor if the interventions documented improved symptom management. During EMR review, questions as to the accuracy of patients’ baseline and current assessments were raised. Further investigation of assessment accuracy is warranted in a future study.

Single methods of multifaceted education such as didactic lecture have been shown to improve nurses’ knowledge of delirium (Layne et al., 2015; Paquette et al., 2010; Varghese et al., 2014) and increase use of nonpharmacological interventions (Hshieh et al., 2015; Sykes, 2015; Varghese et al., 2014). Web-based education alone has also led to improved delirium knowledge and recognition (McCrow, Sullivan, & Beattie, 2014; van de Steeg et al., 2014), screening, documentation, and use of nonpharmacological interventions (van de Steeg et al., 2014). Other learning approaches such as simulation and case studies improved knowledge and recognition of delirium (Page et al., 2010; Paquette et al., 2010). Multifaceted education in this project combined didactic lecture as well as the CBT with case studies, web-based resources, the delirium-screening tool, and a bedside coach.

Adding the bedside coach as a resource to reinforce education and assist in application of new knowledge is described in previous studies (Gordon et al., 2013; Hshieh et al., 2015; Mudge et al., 2012; Solberg, Plummer, May, & Mion, 2013; Yanamadala et al., 2013). In this project, the bedside coach was the project leader/clinical nurse specialist for the unit. Her daily rounding...
and consultation on patients with delirium role modeled the steps needed to “B.E.A.T.” delirium such as investigating and addressing contributing factors in collaboration with physicians and providers.

Gordon et al. (2013), Solberg et al. (2013) and Yanamadala et al. (2013) reported increased delirium screening and documentation when adding a bedside coach to education. Hshieh and colleagues (2015) reported increased documentation of nonpharmacological intervention use as well as decreased delirium incidence. Mudge and colleagues (2012) also reported decreased delirium incidence when using a bedside coach in a multifaceted education intervention. Adding the bedside coach/resource in this project was accompanied by a steady increase in the percent of documentation measures throughout the months of concurrent review. It was not determined that the improvement was a direct result of the bedside coach’s influence.

Decreased delirium incidence following multifaceted or other types of education interventions for nurses was reported by multiple authors (Allen et al., 2011; Lundstrom et al., 2005; Ramaswamy et al., 2011; Rivosecchi et al., 2015; Tabet et al., 2005; van de Steeg et al., 2014; Vidan et al., 2009; Wand et al., 2014). In this project, delirium incidence was measured using encephalopathy codes on discharge. Because coding is a physician responsibility and the education was focused on improving nurses’ knowledge, it was not surprising that there was no significant change in this measure. Capturing a higher percent of patients with hospital-acquired delirium (encephalopathy) is a future goal and suggests improved recognition. Yanamadala and colleagues (2013) reported increased delirium incidence following delirium education that included various means such as multifaceted, didactic, delirium screening tools, case studies, and bedside coaching.
Limitations

There are several limitations in this EBP QI project. Generalizability is limited because this multifaceted education was translated in one unit of one hospital. Results in another unit may vary based on the context. The education was not mandated, and there were some nurses who did not participate in the project as intended. Not all nurses followed the directions regarding the sequential order for completing the education; therefore results from the NKDQ must be interpreted with caution. Since results were reported in aggregate, there was no way to determine if individuals completing both the in-service and the CBT had greater improvement in scores than participants completing only one education method. Finally, the NKDQ was not validated at the time of this project (Hare et al., 2008).

There were two different methods for attaining patient records. October through December 2014 patient records were obtained through discharge reports from the project unit. October through December 2015 records were generated through an EMR report for admissions to the project unit. To account for the difference in how the records were obtained, efforts were made to standardize the review process. Each record was reviewed from the first assessment done on admission through at least 48 hrs after admission. Only admissions of greater than 24 hours were included in the data.

Implications

Use of multifaceted education in this EBP quality improvement project demonstrated increased delirium recognition evidenced by statistically significant improvements in delirium documentation. Rounding by a bedside coach reinforced learning and assisted with translating knowledge into practice. The program is amendable for spread to other hospital units. Hospital leaders recommend spreading the education to additional nursing units and to other disciplines.
Leadership support and interdisciplinary collaboration helps sustain current and future care improvements for this vulnerable population.

Coding for the diagnosis has financial benefits for the organization. The encephalopathy code (metabolic, toxic, NOC, NEC) is a major complication or comorbidity (MCC). Adding a MCC moves the Medicare Severity-Diagnosis Related Group (MS-DRG) to a higher relative weight designed to reflect the resource consumption needed to care for the patient (A. Gerhart, personal communication, March 9, 2016; OptimInsight Staff, 2012). With a higher relative weight, the reimbursement is increased.

Improved documentation of delirium risk, symptoms, and treatment by nursing staff aids in the coding process. Documentation specialist nurses in the hospital review patient records to assist in accurate coding allowing for maximum reimbursement for each admission (Kennedy, 2015). These nurses query providers to consider an encephalopathy diagnosis with documented delirium evidence including a baseline change in cognition, symptoms, risk factors, and treatment (A. Gerhart, personal communication, March 9, 2016). These documentation measures were improved significantly in this project.

Conclusions

The complications associated with delirium are devastating to patients. Many have poor outcomes including increases in mortality, length of stay, hospital acquired conditions, rates of discharge to nursing homes, and functional and cognitive decline (Greer et al., 2011; Inouye et al., 2001; Inouye et al., 2014; Leslie & Inouye, 2011; Leslie et al., 2008). Prevention is the most effective strategy to reduce delirium and its complications (Inouye, 1998; Inouye et al., 2014). According to Inouye et al. (1999, 2014), 30-40% of cases are preventable.
By educating nurses and direct care providers, preventive efforts are enhanced and the morbidity and mortality associated with delirium may be reduced (Inouye, 1998). Understanding the risks factors and the interventions for each risk promotes successful prevention and treatment. The multifaceted education intervention to improve nurses’ recognition and management of delirium is a needed first step toward improved delirium care for the hospitalized patient 65 years and older. Spread of the education intervention to other nursing units in the project hospital is needed. Further studies regarding use of multifaceted education to improve the accuracy of screening is warranted based on incidental findings from the records reviewed in this QI project. Studies regarding the effectiveness of nonpharmacological interventions on decreasing incidence, morbidity, and mortality are suggested. In addition, future education for physicians and other disciplines is warranted to improve interprofessional collaboration regarding delirium care. Enhancing nurses’ knowledge is an important endeavor since nurses are direct, front-line caregivers to this vulnerable population.
References


Appendix A

B.E.A.T. Delirium Mnemonic

B = Baseline change in change in cognition?
E = Evaluate current cognition and screen
A = Assess for delirium risk
T = Treat the risk with nonpharmacological interventions

(Designed by Amy Seitz Cooley) ©
Appendix B

Patient Demographic Data

Patient demographics comparison
October-December 2014 to October-December 2015

- **Females**: 63% (p = .637)*
- **Males**: 37% (p = .909)*
- **Non-health care origin**: 88% (p = .788)*
- **Dementia Diagnosis**: 16% (p = .132)*
- **Baseline cognitive change on admission**: 21% (p = .006)*
- **Baseline ADL/mobility change on admission**: 60% (p = .006)*

*Chi Square p Value
Appendix C

Delirium Documentation Results

![](image)

<table>
<thead>
<tr>
<th>Category</th>
<th>Pre-Intervention 2014</th>
<th>Post-Intervention 2015</th>
<th>p Value</th>
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<tr>
<td>Delirium Risk Documented</td>
<td>72%</td>
<td>83%</td>
<td>(p &lt; .0001)*</td>
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<td>Delirium Screen BID</td>
<td>57%</td>
<td>50%</td>
<td>(p &lt; .0001)*</td>
</tr>
<tr>
<td>Plan of Care Initiated</td>
<td>14%</td>
<td>30%</td>
<td>(p &lt; .0001)*</td>
</tr>
<tr>
<td>Nonpharmacological Interventions Documented</td>
<td>5%</td>
<td>30%</td>
<td></td>
</tr>
</tbody>
</table>

(* Chi Square p Value)
Appendix D

Nurses’ Knowledge of Delirium (NKDQ) Results

<table>
<thead>
<tr>
<th>Pre vs. Post</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Significance*</th>
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<td>grade_knowledge</td>
<td>Pre</td>
<td>53</td>
<td>83.6927</td>
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<tr>
<td></td>
<td>Post</td>
<td>16</td>
<td>93.3036</td>
<td>7.59016</td>
</tr>
<tr>
<td>grade_risk</td>
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<td>16.76474</td>
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<tr>
<td></td>
<td>Post</td>
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</tr>
<tr>
<td>grade_overall</td>
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<td>68.0294</td>
<td>12.20111</td>
</tr>
<tr>
<td></td>
<td>Post</td>
<td>16</td>
<td>77.6042</td>
<td>7.20573</td>
</tr>
</tbody>
</table>

* Independent samples t-test p value; level of significance p < .05