Table B.62: Delirium, Staff Education and Training–Single Studies

Note: Full references are available in the [Section 14.2 reference list](#Section14point2refs).

| Author, Year | Description of Patient Safety Practice | Study Design; Sample Size; Patient Population | Setting | Outcomes: Benefits | Implementation Themes/Findings | Risk of Bias (High, Moderate, Low) |
| --- | --- | --- | --- | --- | --- | --- |
| Babine et al., 20181 | Education and training to reduce falls and length of stay via delirium recognition | Retrospective study looking at delirium and falls.  Two chart reviews were performed on patient falls as identified in the hospital safety reporting system in 2009–2010 (98 fallers) and 2012 (108 fallers). | Hospital; 637-bed urban tertiary teaching organization | After the education, documentation of the “diagnosis of delirium” and “no evidence of delirium” increased from 14.3% to 29.5% and from 27.6% to 44.4%.  The Confusion Assessment Method (CAM) identified the diagnosis of delirium at 76% accuracy. The length of stay decreased by 7.3 days. The fall rates in 2011 and 2012 were 3.01 and 2.82 falls per 1,000 patient days and in 2013 decreased to 2.16. | The results indicate that improving delirium recognition and treatment through interprofessional education can reduce falls and length of stay. | Moderate |
| Baird and Spiller, 201711 | Use of 4 A’s Test (4AT) and CAM tools to assess cognition upon admission for hospice patients | A quality improvement (QI) approach (PDSA: Plan, Do, Study, Act) was used to improve screening for delirium on admission to a hospice unit. A baseline measure was taken of the rate of performance of cognitive assessment on admission. Five PDSA cycles were then undertaken which involved implementing change and then evaluating results through auditing case notes and interviewing staff. | Hospice | The 4AT is a usable tool in the hospice inpatient setting to assess patients’ cognitive state on admission and can easily be incorporated into the admission process. | Not provided | None |
| Belanger and Ducharme, 201514 | Educational intervention in one hospital designed to improve management of delirium | This study was undertaken to field test and qualitatively evaluate a narrative-based educational intervention for nurses in hospital units with a high incidence of delirium. | Acute care; cardiac and orthopedic surgery units at a short-stay hospital | The educational nursing intervention under study affords promising possibilities for improving the care provided older adults at risk for delirium and their families. It is also potentially transferable to populations of nurses who attend to other patient groups with complex health needs, particularly in geriatric care, oncology, and palliative care. | Not provided | Moderate |
| Booth et al., 201927 | “Virtual ACE Intervention” on two medical/surgical units in an academic medical setting | The “Virtual ACE Intervention” standardizes care processes for cognition and function without daily geriatrician oversight on two non-ACE units. The Virtual ACE Intervention includes staff training on geriatric assessments for cognition and function and on nurse-driven care algorithms. | Acute care; 1,152-bed tertiary care academic hospital with 52 acute care units, including one ACE Unit; the target units were two medical-surgical units serving hospitalist and orthopedic patients, selected based on having a high percentage of older adults and engaged physician leaders | Postintervention, the completion of the assessments for current functional status and delirium improved (62.5% vs. 88.5%, P <.001 and 4.2% vs. 96.5%, P <.001, respectively). In a subsample analysis in the postintervention period, more patients were “up to the chair” (i.e., had improved mobility) in the past day (36.4% vs. 63.5%, P .04) and the prevalence of an abnormal delirium screening score was lower (13.6% vs. 4.8%, P .16). | The Virtual ACE Intervention is a feasible model for disseminating ACE Unit principles to non-ACE Units and may lead to increased adherence to recommended care processes and improved clinical outcomes. | Low |
| Brooke et al., 201819 | Better understanding of “lived experience” of nurses caring for patients with delirium to improve care | Semi-structured interviews | Acute care (England) | These researchers concluded that there is a need for education about delirium across specialties. | Not provided | High |
| Coyle et al., 201720 | New educational initiatives for nurses | Semi-structured interviews | Hospital | Thematic analysis revealed that nurses described delirium assessment and identification variously as “it’s not my job,” “it is my job,” and “it’s complex.” New educational initiatives are needed. | Not provided | High |
| Detroyer et al., 201813 | E-learning tool that will be easier and more cost-effective for educating nurses on delirium screening and management | A before-after study in a sample of patients enrolled pre-intervention (non-intervention cohort; n = 81) and post-intervention (intervention cohort; n = 79), and nurses (n = 17) | Hospital; geriatric ward of a university hospital | No significant difference was found between the intervention cohort and the non-intervention cohort for in-hospital prevalence and duration of delirium. | This study, the first in its area to investigate effects of delirium e‑learning on patient outcomes, demonstrated no benefits for either geriatric patients or nurses. | Moderate |
| Devlin et al., 20086 | Didactic and clinical-reasoning based educational approach to improve nurses’ ability to identify delirium using a standardized tool correctly | Fifty intensive care unit (ICU) nurses evaluated an ICU patient for pain, level of sedation, and presence of delirium before and after an educational intervention | Intensive care; two different hospitals  (university medical and community teaching) | After education, the number of nurses able to evaluate delirium using any scale (12% vs. 82%, P< 0.0005) and use it correctly (8% vs. 62%, P< 0.0005) increased significantly. | A simple composite educational intervention incorporating script concordance theory improves the capacity of ICU nurses to screen for delirium nearly as well as experts. | Moderate |
| DiLibero et al., 20167 | Improve use of CAM; included a feedback loop, real time auditing, and just- in-time learning | QI study (pre-test-post-test design) was used to evaluate the effectiveness of a program to improve the accuracy of delirium screenings among patients admitted to a medical ICU or coronary care unit | Acute care; medical ICU and cardiac care unit at an urban tertiary academic medical center and level I trauma center in the northeast region with more than 600 licensed beds, including 77 adult ICU beds. | Compliance with performing at least one delirium assessment every shift was 85% at baseline and improved to 99% during the postintervention period. Baseline assessment accuracy was 70.31% among all patients and 53.49% among sedated and agitated patients. Postintervention assessment accuracy improved to 95.51% for all patients and 89.23% among sedated and agitated patients. | The results from this project suggest the effectiveness of the program in improving assessment accuracy among difficult-to-assess patients. Further research is needed to demonstrate the effectiveness of this model across other critical care units, patient populations, and organizations. | Moderate |
| DiLibero et al., 201815 | Multifaceted nurse-led education program on delirium assessment among neuroscience patients | QI project; a multifaceted nurse-led intervention was implemented, and a retrospective analysis of preintervention and postintervention data on assessment accuracy was completed; results were stratified by population, level of sedation, and level of care; differences were analyzed using Fisher exact test | Acute care; urban tertiary academic medical and level I trauma center in the northeast region with more than 600 licensed beds, including 77 ICU beds | Data from 1,052 delirium assessments were analyzed and demonstrated improvement in assessment accuracy from 56.82% to 95.07% among all patients and from 29.79% to 92.98% among sedated or agitated patients. | Results from this project demonstrate the effectiveness of the nurse-led intervention among neuroscience patients. Future research is needed to explore its effectiveness across other institutions and to describe the effectiveness of new interventions to improve outcomes at the patient and organizational levels. | Moderate |
| Forsgren and Eriksson, 201024 | Education and implementation of validated screening tools to improve care | National survey (Sweden) | Intensive care | Awareness of delirium in ICUs is low, with a lack of implementation of validated screening tools for its diagnosis. Education is needed to improve quality of care. |  | Low |
| Gesin et al., 20128 | Multifaceted education program on delirium using Intensive Care Delirium Screening Checklist (ICDSC) in surgical trauma ICU (STICU) | The knowledge and perceptions of subject nurses about delirium, and agreement between the independent assessments of delirium by the subject nurse and by a validated judge (who always used the ICDSC), were compared across three phases: Phase 1: No delirium screening tool and no education, Phase 2: ICDSC and minimal education (i.e., ICDSC validation study only), Phase 3: ICDSC and multifaceted education (i.e., pharmacist-led didactic lecture, Web-based module, and nurse-led bedside training) | Intensive care; ICU units at Carolinas Medical Center, an 813-bed community teaching hospital with 140 adult ICU beds located in Charlotte, NC | Agreement between nurses and the validated judge in the assessment of delirium increased from Phase 1 (k = 0.40) to Phase 2 (k = 0.62) to Phase 3 (k = 0.74). Nurses perceived use of the ICDSC as improving their ability to recognize delirium. | Use of a multifaceted education program improves both nurses’ knowledge about delirium and their perceptions about its recognition. Implementation of the ICDSC improves the ability of STICU nurses to evaluate delirium correctly. | Low |
| Godfrey et al., 201321 | Integrated delirium prevention system of care | Participatory action research (England); data collection included facilitated workshops, relevant documents/records, qualitative one-to-one interviews, and focus groups with multiple stakeholders and observation of ward practices; grounded theory strategies were used in analyzing and synthesizing data | Acute care | “Awareness of delirium was variable among staff, with no attention on delirium prevention at any level; delirium prevention was typically neither understood nor perceived as meaningful. The busy, chaotic, and challenging ward life rhythm focused primarily on diagnostics, clinical observations, and treatment. Ward practices pertinent to delirium prevention were undertaken inconsistently. Staff welcomed the possibility of volunteers being engaged in delirium prevention work, but existing systems for volunteer support were viewed as a barrier.  [The] evolving conception of an integrated model of delirium prevention presented major implementation challenges flowing from minimal understanding of delirium prevention and securing engagement of volunteers alongside practice change. The resulting Prevention of Delirium Programme combines a multicomponent delirium prevention and implementation process, incorporating systems and mechanisms to introduce and embed delirium prevention into routine ward practices.” | Not provided | Moderate |
| Gordon et al., 20133 | Use of evidence-based screening tools to detect delirium in patients with neuroscience diagnoses | Pre-post design; 47 registered nurses | Hospital; 31-bed neuroscience intermediate care unit at a large academic medical center in Boston, MA | Findings reveal that the neuroscience nurses recognize the absence of delirium 94.4% of the time and the presence of delirium 100% of the time after a didactic session and coaching. | Expert coaching at the bedside may be a reliable method for teaching nurses to use evidence-based screening tools to detect delirium in patients with neuroscience diagnoses. | Moderate |
| Horvath et al., 201112 | Use of pocket cards with a variety of assessment tools for delirium in a primary care setting | Project target: practitioners in primary care settings, in particular physicians, nurse practitioners, and physician assistants | Primary care (Veterans Health Administration) | A low-tech, easy-to-use pocket card and assessment guide to evaluate delirium, dementia, and depression received favorable reception from an interdisciplinary group of clinical providers. | Not provided | Moderate |
| Johnson et al., 201618 | Education program to emphasize importance of delirium screening in trauma unit to reduce harm | Evaluate change in practice and beliefs regarding delirium among nurses, pharmacists, respiratory therapists, and physicians after an educational intervention | Acute care (trauma ICU); the hospital consists of 266 beds, with a 22-bed TICU. The hospital is one of eight trauma facilities in Arizona designated as level I by the State, annually caring for more than 3,000 of the region’s most critically injured patients. | Changes in staff responses to the statement, ‘‘Delirium is largely preventable’’ were statistically significant (p = 0.035). The questionnaire revealed that the healthcare team believes that delirium is largely preventable. Early identification of delirium and risk factors associated with delirium can initiate the first step in preventing, identifying, and correctly treating delirium in the TICU. | An educational intervention emphasizing the importance of screening for delirium, risk factors for delirium, and approaches to decrease the incidence of delirium can improve identifying and correctly treating delirium in a critical care setting. | Moderate |
| Kennelly et al., 201322 | Understanding provider knowledge, skills, and attitudes toward assessing cognition to improve care | Self-administered questionnaire | Emergency Department (Ireland); older patients | One-third of respondents felt they lacked the relevant expertise to perform cognitive screening, with those with training in geriatrics being less likely to cite lack of experience as a factor. | Not provided | Moderate-High |
| Kubota et al., 201625 | Program to increase oncology nurses’ confidence and knowledge regarding care of patients, focused on four “psychological issues”: normal reactions, clinically significant distress, suicidal thoughts, and delirium | A stratified, open, parallel-group, randomized trial; oncology nurses were assigned randomly to either the intervention group (n= 50) or the waiting list control group (n= 46) | Oncology hospitals and clinics (Japan) | In the intervention group, confidence and knowledge (but not attitudes) were significantly improved relative to the control group. No significant intervention effects were found for job-related stress and burnout. A high percentage (98%) of participants considered the program useful in clinical practice. | This psycho-oncology training program improved oncology nurses’ confidence and knowledge regarding care for patients with psychological problems. | Moderate |
| LaFever et al., 201516 | Delirium education program to increase oncology registered nurses’ (RNs’) confidence and knowledge in a community hospital | 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; the nurses attended a delirium educational session to learn about risk factors, prevention, assignment, and management of delirium | Inpatient medical-surgical oncology unit | 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. | Moderate |
| Marino et al., 20159 | Use of ICDSC to increase awareness and knowledge among ICU nurses regarding how best to care for patients with delirium | QI project; a didactic training program for bedside critical-care nurses was developed and implemented; upon completion of the educational sessions, a daily bedside delirium screening and care bundle protocol were implemented for all patients in ICUs throughout the facility; bedside critical-care nurses were invited to participate in the formal teaching sessions | Intensive care; 446-bed local teaching facility | All five nursing attitude and perceived confidence statements measured before and after the educational sessions showed a significant increase in positive perceptions overall (P.0001). | This quality improvement project demonstrates that a formal didactic training program for ICU nurses can result in increased awareness and knowledge of ICU delirium, and adequately prepare them for how to properly screen and treat patients. | Moderate |
| Meako and Thompson, 201117 | Educational program for orthopedic nurses; curriculum based on Hartford Foundation for Geriatric Nursing in a Nurses Improving Care to Healthsystem Elders (NICHE) unit | A pre-test–post-test quasi-experimental design was used to test the effectiveness of an educational intervention and to describe orthopedic nurses’ knowledge about delirium and delirium risk in hospitalized orthopedic patients | Hospital; convenience sample of RNs working on a 39-bed orthopedic unit was used in this study | Regardless of education, years of experience, or shift worked, orthopedic RNs had difficulty with questions related to recognition of delirium, predisposing, and precipitating risk factors, and medications that can contribute to delirium. The educational intervention was effective, and scores significantly improved from baseline following the intervention. | Baseline knowledge assessment confirmed orthopedic nurses’ lack of understanding of delirium. The 1-hour educational intervention, based on nationally recommended standards, improved the nurses’ knowledge and could be useful in orthopedic nursing continuing education. | Moderate |
| Nelson, 200910 | Teaching the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) to staff nurses, using RDSS and Richmond Agitation Assessment Scale | The CAM-ICU is a tool for screening for delirium in ventilated patients that with proper training can be administered quickly by staff nurses in the ICU. This article explains six preparatory decisions required in training staff to use the CAM-ICU | Hospital (ventilated patients) | The CAM-ICU tool is designed to allow nurses in the ICU to screen ventilated patients for delirium. The features of the tool can be easily taught and the tool, once understood, requires very little time for administration. | The challenge of teaching nurses is to assist them to embrace the tool as part of their routine assessment, rather than as something to be added on to existing procedures. | Moderate |
| Nydahl et al., 201823 | Evaluate delirium management in nurses and physicians in critical care to improve education and training to improve care | Open online survey | Intensive care (Germany) | More nurses than physicians reported screening for delirium. A majority reported screening when delirium was suspected, and more than 50% used validated instruments. Half of the clinicians surveyed had structures in place, such as a delirium-related process of care. Authors concluded that both nurses and physicians need more knowledge and training on when and how to use validated assessment instruments for identifying and managing delirium. | Not provided | Moderate |
| Sockalingam et al., 20142 | Interprofessional education (IPE) to improve delirium care | Systematic review | N/A | Review of the limited evidence suggests that IPE programs may influence team and patient outcomes in delirium care. More systematic studies of the effectiveness of interprofessional delirium education interventions are needed. | Not provided | Low |
| Sockalingam et al., 20162 | Flipped classroom (FC) approach to improving the quality of delirium care using an interprofessional train-the-trainer (TTT) program | Implementation of novel education methods and post-implementation evaluation of test scores; delirium care self-efficacy and knowledge test scores were measured before, after, and 6 months after the training session; clinician delirium assessment rates were measured by chart audits before and 3 months after implementation of delirium training sessions | Hospital | Delirium knowledge test scores (7.8 ± 1.6 versus 9.7 ± 1.2, P <.001) and delirium care self-efficacy were significantly higher immediately after the TTT session compared with those of pre-session, and these differences remained significant at 6 months after the TTT session. Trainer sessions significantly improved clinician delirium assessment rates, from 53% for pretraining to 66% for post-training.  Data suggest that a TTT FC delirium training approach can improve participants’ perceived delirium care skills, confidence, and knowledge up to 6 months after the session. This approach provides a model for implementing hospital-wide delirium education that can change delirium assessment behavior while minimizing time and personnel requirements. | Not provided | Moderate |
| Young et al., 20125 | Understanding barriers to systematic inpatient delirium screening to improve staff education and improve quality of patient care | Survey | Hospital | Eighty-two percent of respondents had never used or heard of the CAM; only three respondents felt proficient with the use of CAM. | Not provided | Moderate |
| Wong et al., 20184 | Understanding barriers to inpatient delirium screening to improve staff education and improve quality of patient care | Qualitative focus group survey of nurses | Hospital (orthopedic unit; Canada) | While those surveyed had mixed feelings about the CAM, only 35% of participants recalled receiving training on the tool in the past. | Not provided | Moderate |