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Assessment of Nurses' Knowledge of Tools and Implementation of Interventions to Prevent Intensive Care Unit Delirium

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ASSESSMENT OF NURSES' KNOWLEDGE OF TOOLS AND IMPLEMENTATION OF INTERVENTIONS TO PREVENT INTENSIVE CARE UNIT DELIRIUM

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Abstract

Background: Intensive Care Unit (ICU) acquired delirium is a significant practice issue for nurses. Delirium in ICU patients can be perceived inaccurately by nurses as an expected part of patients' ICU stay. Increased morbidity and mortality is highly correlated with increased symptoms of delirium during the ICU stay. Nurses are in the position to notice subtle changes in patients and intervene in a timely manner to avert negative outcomes resulting from delirium.

Purpose: The aim of this research is to investigate nurses' knowledge of assessment tools, and discover how effectively nurses are using the tools and implementing interventions to prevent ICU delirium.

Results: Eighteen articles were analyzed for this literature review. The Humanistic Nursing Theory was chosen as the lens to guide this research because of it's focus on the nurse-atient relationship and the environment in which nursing takes place. The CAM-ICU tool and the ISDCS tools are both validated for accurately assessing delirium. Interventions for delirium are carried out when providers acknowledge nurses' assessment. A gap exists in the research that would show how consistently delirium assessment is implemented in the ICU setting and how often education should be enforced to improve accuracy and compliance.

Conclusion: Nurses are performing more delirium assessment with minimal training, and collaboration from providers. Ongoing education is needed to ensure consistency in use and proper application of evidence based tools for delirium assessments and interventions to prevent delirium.

Implications for Research and Practice: Implementing current evidence-based practice into the clinical environment requires persistent encouragement from clinical nurse educators, and

collaboration from the health care team. Ongoing education to change the mindset of the healthcare team regarding ICU delirium will produce consistency in evidence-based practice. Assessment for delirium improves quality of care, and is a cost-effective way within the nursing scope of practice to improve patients' outcomes. Further research to investigate consistent and proper use of assessment tools in the Intensive Care setting, and the frequency at which ongoing education of nurses and other ICU care team members should be carried on will be beneficial.

Keywords: Delirium, nursing assessments, interventions, tools, CAM-ICU, RASS, ICDSC

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Chapter One: Introduction

Intensive Care Unit (ICU) acquired delirium is a significant practice issue for nurses. Delirium in ICU patients can be perceived inaccurately by nurses as an expected part of patients' ICU stay. This perception causes symptoms of delirium to be responded to with quick reversion to pharmacological interventions by nurses. The complexities which delirium adds to patients' care brings out a response of unease and dread from nurses. The word delirium, derives from the Latin word deliria which implies acting crazy, or off the track (Robert, 2001). Patients' hospital stays become increasingly complicated in the setting of delirium. McFeely (2015) describes delirium as a major predictor of negative outcomes in ICU patients. Increased morbidity and mortality is highly correlated with increased symptoms of delirium during ICU stay. The cause of delirium is multifactorial. It takes team effort to prevent and treat delirium effectively in ICU patients. Nurses being the first in line of patients' care, are in the position to notice subtle changes in patients and intervene in a timely manner to avert negative outcome. Validated tools such as the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) assessment tool, the Intensive Care Delirium Screening Checklist (SCDSC) used along with the Richmond Agitation-Sedation Scale protocol (RASS) are available for nurses' use to effectively assess and treat delirium in ICU patients. The knowledge and use of such tools equip nurses to initiate timely interventions that yield positive outcomes for patients (Selim & Wesley 2017). This chapter is intended to bring to light the complexities of delirium in ICU patients, describe the impact of delirium in patient outcomes, and introduce the theoretical nursing concept that guides this research.

Statement of Purpose

The aim of this research is to investigate nurses' knowledge of assessment tools, and discover how effectively nurses are using available interventions to prevent ICU delirium. Delirium acquired during hospital stay affects patients' outcomes negatively, and constrains nurses' cares and interactions with patients. A progressing and cooperative patient affected by ICU delirium could suddenly become suspicious of nursing care, to the extent of becoming extremely uncooperative, risking self-endangerment.

Nurses must be vigilant to catch on to changes in patients' mental status and must be aware of the potential for the development of delirium. To ensure the effective assessment of delirium in hospitalized patients, nurses have the CAM-ICU, and the ICDSC checklist. These tools are used along with the RASS protocol to detect and treat delirium early. Pharmacological and nonpharmacological interventions can be implemented with early detection of delirium. Consistent practice of the use of assessment and protocols help prevent delirium and its negative outcomes. (Abraham et al., 2014; Speed, 2015). Selim and Wesley (2017) argue that there is an evident absence of the use of standardized tools and the adaptation of protocols to manage and treat ICU acquired delirium. Are nurses carrying out set protocols and interventions to prevent ICU delirium? What effects are these tools and interventions having on patients' delirium? Are nurses following through to make decisions to treat patient's ICU delirium based on patients' scores in conjunction with the tools?

Considering the severity of patients' outcomes due to delirium acquired during hospital stay, and the effect delirium has on nursing care and their interactions with patents there is a need to critically review the literature and examine nurses' knowledge of interventions to prevent

delirium and discover the consistency with which delirium assessment is carried out and supported.

Evidence of Need for a Critical Review

The American Psychological Association describes delirium as a transient, reversible cause of cerebral dysfunction that manifests with a wide range of neuropsychiatric abnormalities (American Psychological Association, 2013). The prevalence of delirium in ICU patients ranges from 20-80%. The rate of incidence depends on how sick patients are, the length of their ICU stays, and their intubation status. Symptoms of delirium sometimes overlap with other neurological presentation such as increased confusion, or short-term memory deficits. Determination of delirium is based on clinical presentation (Girard et al. 2010). Because delirium is not diagnosed through scientific or medical testing, nurses' awareness of the presenting symptoms and clinical signs of delirium is imperative in preventing the exacerbation of delirium in ICU patients. Delirium experienced in the ICU delays rehabilitation potential, increases stress for relatives, increases the risk of long term cognitive impairment of patients, and yields higher mortality rates (Abraham et al., 2014; Girard et al., 2010).

Studies conducted to assess the effective use of delirium assessment tools by ICU nurses have shown that systematic screening for delirium in the ICU is infrequent, and inconsistent (Christensen, 2014; Elliot, 2014; Speed, 2015). Studies indicate that ICU delirium is mostly treated with pharmacological interventions such as antipsychotics and benzodiazepines. These medications show limited evidence in their use to prevent and treat delirium (Christensen, 2014; Elliot, 2014; Mac- Sweeney et al., 2010). Timely assessment and nursing interventions have demonstrated effectiveness to prevent and decrease the incidence of delirium among ICU patients. Interventions such as blocked sleep periods, maintaining a normal sleep wake cycle,

intellectual engagement, consistent reorientation of patients, and early mobilization have been tested and shown to decrease delirium and improve patients' outcome (Mac-Sweeney et al., 2010; McFeely, 2015). This evidence establishes the role that nurses must play in the prevention and treatment of delirium in ICU patients. The argument reiterates the need to search the literature and explore nurses' knowledge of ICU delirium assessment, and implementation of interventions to prevent ICU delirium.

Significance to Nursing

Delirium often goes undetected if structured monitoring is not in place. In one study, delirium was shown to be undetected 72% of the time without structured monitoring. (Girard et al., 2010). Undetected delirium is associated with an annual health care cost of $4 billion to $16 billion (Dilibero, Ninobla, & Woods, 2016). Wells (2012) found delirium to be associated with extended ICU and hospital length of stay and mortality, independent of other factors such as age, severity of illness, and administration of psychotropic medications. Increased incidence of ICU delirium is not entirely based on a lack of nursing assessment intervention. Nevertheless, the importance nurses place on early detection through assessment and interventions can make a difference in patients' outcomes.

Roberts (2001) attests that delirium can be perceived by healthcare providers as a normal reaction to potentially life-threatening situations. This misconception often leads to inappropriate or neglected treatment of delirium which may result in increased ICU stay and mortality. Viewing delirium as an expected part of patients' ICU stay in response to their critical condition needs to be rejected by nursing and medical staff. Resorting to medical management as the first intervention for treating symptoms of delirium has not been proven as the best approach. Identifying highly agitated patients with dramatic change in their behavior can be done by any

nurse. Nurses that are truly present take note of subtle changes in patients, and use those changes as clues to activate tools for further assessment of delirium. The earlier the interventions, the better the outcome is for patients.

The Nurse Practice Act in section 7.3 mandates nurses to develop the profession by implementing, and maintaining professional standards in clinical, administrative, and educational practice (Russel, 2017). Implementation of interventions within the nurse's scope of practice in the clinical setting involves interventions that improve patients' orientation, and decrease delirium in a cost-effective way. Nursing interventions implemented through appropriate care planning to promote sleep, or help patients regain their sleep-wake cycle, and decrease sleep interruptions could make a difference in patients' outcomes, and promote families' wellbeing. Interventions, when implemented in a timely manner, while improving patients' outcomes, will also decrease length of hospital stay, and reduce healthcare cost. Reimbursement to healthcare systems by the Center for Medicare and Medicaid Services (CMS) depends upon patients' timely progression and discharge. The survival of healthcare systems depends on financial viability. By preventing and treating delirium nursing contributes to this financial liability.

These interventions add value to the quality of care patients receive. Making use of validated delirium screening tools, following the sedation weaning protocol for patients' re-assessment can help nurses intervene early to prevent delirium and advert its negative outcome among ICU patients (Pecci, 2015). Carrying out these interventions is a mandated professional nursing responsibility that can be initiated within the nurse's scope of practice.

Conceptual Model/Theoretical Framework

There is a connection between ICU delirium, the therapeutic nurse-patient relationship, and the environment in which nurses' interactions with their patients occur (Dyson, 1999). For

this research, ICU delirium will be viewed through the lens of the Humanistic Nursing Theory. This Theory was chosen because of its focus on the nurse-patient relationship and the healing environment in which nursing occurs. The Humanistic Nursing Theory was developed by Paterson and Zdehard to shed light on human relationship in nursing (Patterson & Zdehard, 2007).

Concepts addressed by Patterson and Zdehard in the Humanistic Nursing Theory include:

1. Person- In this theory, humans are viewed as holistic beings that are special, dynamic, and full of creativity. Paterson and Zdehard (2007) emphasize that people are to be valued, respected, and trusted with the right to make informed choices regarding their health. Using this concept as a lens to explore the effects of nursing assessment and interventions to prevent ICU delirium keeps the patient in focus. Keeping patients in focus as individuals, dynamic, and full of creativity pushes the quest for this research.
2. Health- Patients' health is valued by the theorists as necessary for survival, and becomes the goal of nursing. Maintaining the dignity of patients throughout their care is also emphasized by the theorist (Patterson & Zdehard, 2007). Helping patients maintain their dignity within this context requires implementation of interventions such as frequent reorientation, early mobilization, and allocation of blocked sleep periods as priorities for the very sick. Assessment of the effect of these interventions on patients' recovery and health restoration will enforce the practicality of the Humanistic Nursing Theory.
3. Environment- Patients' healing improves based on the time and space in which the nursing experience takes place. Patterson and Zdehard (2007) suggest that the nursing dialogue is reinforced when the nurse understands how the patient relates to their space. Frequent re-orientation of patients, consistent sedation weaning for mental status assessment, regular use

of the RASS protocol and other assessment tools will help nurses understand how patients relate to their environment within the ICU setting. Deferring the middle of the night bath to allow for a blocked sleep cycle and minimizing conversation at the nurse's station will decrease environmental stimuli to improve healing and decrease the risk of delirium.

4. Nursing – Patients and nurses share a unique lived human experience. This intricate experience between patients and nurses is described by the humanistic theorists as an inter-human transactional dialogue of helping. Nurses discover their own humanity, and respond to the humanity of patients (Zane & Denise, 2013). When the nurse is present (mind, spirit, and body), this dialogue is experienced. It is this established relationship that the nurse develops which allows the nurse to catch on to the subtle mumbling of an otherwise oriented patient and moves to proceed with further assessment and reorientation techniques to improve the patient's outcome. This transactional dialogue between the nurse and the patient can be experienced when the nurse is effectively using assessment tools given to create the dialogue, by keeping the patient alert and oriented. Maintaining the humanity of patients produces the reciprocal effect of maintaining the nurses' humanity.

Human relationship emphasized through the Humanistic Nursing Theory can be summed up by the words treat others as you would want to be treated. Resources uncovered through this critical review of the literature will be viewed from the perspective of these concepts. The concepts within the Humanistic Nursing Theory will guide the analysis and interpretation of the findings of this review. Concepts of Person, Health, Environment, and Nursing as defined by the Theory will place the results of the studies that are reviewed in perspective, maintaining the best care of patients as the most important consideration.

Summary

The negative effect of delirium in ICU patient outcomes is concerning. Delirium in ICU patients complicates patients' stay in the ICU, thereby increasing morbidity and mortality. Though the cause of delirium is multifactorial, nurse's role of assessing and intervening to prevent and treat delirium can positively impact patients' outcomes. Validated tools are available to nurses to assess patients and put in place interventions to decrease the incidence of delirium. This critical review of the literature will review resources to discover how effectively nurses are assessing patients and intervening to prevent ICU delirium. Concepts of the Humanistic Nursing Theory will be used to guide the analysis of the findings. Chapter 2 will focus on methods used for finding and choosing the right resources to guide this process.

Chapter Two: Methods

Are nurses knowledgeable of the tools for assessing patients' ICU delirium, and are nurses carrying out the appropriate interventions to prevent ICU delirium? These questions led to the quest to review the literature and find answers. This chapter will describe search strategies used to identify research studies to answer the questions. Chapter 2 also provides rationales for the inclusion and exclusion of research studies.

Search Strategies used to Identify Research Studies

The following search engines were used to identify research articles that would be relevant to the research question: CINAHL, Google scholar, and PubMed.gov. Key words used for the search were: ICU psychosis, ICU delirium, ICU delirium prophylaxis, ICU delirium Nursing, Nurses delirium and intervention. The initial search resulted in greater than 2000 articles under the CINAHL search. Restricting the articles to English version only, ranging from 2000 to the present, with the key words ICU delirium Nursing produced 144 articles. Articles overlapped in the Google Scholar and the CINAHL engines. Twenty relevant articles were selected from PubMed.gov. Twelve of the articles were actual research studies that were saved for further selection.

Criteria for Including and Excluding Research Studies

Only articles with abstracts were considered for further review for inclusion. Sixty articles published in peer reviewed journals were considered for inclusion from CINAHL and Google Scholar. Two articles addressing clinical team approach to implementation of non-pharmacological interventions for delirium were included. Twelve research articles under ten years were selected for further review from PubMed.gov. Articles older than ten years were excluded from the selection. Eight non-published studies, expert opinion, and recommendation

for practice were excluded. Articles focusing on pharmacological interventions for delirium only were not considered for inclusion. Non-research educational articles were not considered for inclusion. Eighteen articles directly addressed the assessment of nursing interventions to prevent ICU delirium and were included in this literature review.

Number and Types of Studies Selected

Ten articles that assessed nursing knowledge and implementation of the CAM-ICU assessment tool were chosen. These studies were experimental, quasi-experimental, or surveys that were conducted and published in peer reviewed journals assessing nursing knowledge of the validated CAM-ICU assessment tool, and/or comparing it with other assessment tools. Five articles addressed non-pharmacological multifaceted interventions to treat and prevent ICU delirium. These studies were randomized control trials, or systemic reviews and meta-analyses of previous trials. Five more articles were trials conducted to address guidelines, and implementation of protocols to assess and treat ICU delirium. Two of the twenty articles were excluded to decrease the number of literature reviews included in this research due to the low level of evidence as depicted by the Johns Hopkins evidence appraisal (Dearholt & Dang, 2014).

Criteria for Evaluating Research Studies

Research articles were structured for analysis using the Matrix format which clearly displayed the quality of articles, and their level of evidence, as defined by the Johns Hopkins Nursing Evidence-Based Practice Rating Scale (Dearholt &Dang 2017). The strengths, limitations, implications for practice, findings, and recommendations for further research are also displayed in the Matrix table. With this structured format in view, concepts of the Humanistic Nursing Theory that addressed patients as individuals, their health, environment, and nursing presence was used to guide the interpretation of the findings.

Summary

Research studies that assessed nurses' knowledge of the CAM-ICU assessment tool, and the implementation of the tools among ICU patients were chosen for this review. Studies that used survey questionnaires to assess nurses' knowledge and barriers to assessing for delirium with pre-and post-educational measurements were prioritized. Concepts of the Humanistic Nursing Theory guided the choice of research studies. The next chapter details the results of the critical review of the literature.

Chapter Three: Literature Review and Analysis

Chapter 3 presents an analysis of the literature based on the Humanistic Nursing Theory. The connections among ICU delirium as part of a patients' health, the therapeutic nurse -patient relationship, environment in which healing takes place, and viewing the patient as an individual, guided the choice of the resources that were chosen for this review. The analysis resulted in four major categories by which this chapter is organized. See Appendix A for detailed analysis from research studies.

Use of Standardized Tool

Five studies emphasized the use of a standardized tool for consistently and accurately assessing delirium (Andrew, Silva, Kaplan, & Zimbo, 2015; DiLibero, O'Donoghue & Desanto, 2016, Eastwood et al., 2012; Elliot, 2014; Pun et al., 2005). These studies had varying objectives with one common underlying factor: the implementation of delirium assessment in the ICU using a standardized tool. Results from these studies support the validity and ease of using the CAM-ICU tool for delirium assessment with education. Overall results from these studies showed increased accuracy identifying early signs of delirium with the use of the CAM-ICU. Pun et al. (2005) emphasized that the CAM-ICU is preferred above other tools because it takes less time to implement, and it has fewer questions to address. The CAM-ICU is woven into nurse's routine assessment. It is easily applicable at the bedside, and has a high inter-rater reliability score. For accurate assessment of delirium to be completed based on the CAM-ICU tool, patients must have the first two features assessed out of four questions, or must exhibit either features three or four. Patients with positive scores are considered to have delirium (McFeeley, 2015).

The RASS sedation assessment scale assesses level of consciousness objectively. The RASS gives nurses the flexibility to treat delirium based on patient's score with pharmacological

and non-pharmacological intervention. The recommendation is to assess ICU patients at least once a shift, or more often based on patient's scores and intervene using the protocols with good judgement (McFeeley, 2015).

Hickin, White, and Knopp-Sibota (2017) implemented the use of an alternative tool, the Intensive Care Delirium Screening Checklist (ICDSC). The Hickin et al. (2017) study was conducted in a Canadian tertiary hospital ICU to examine nurses' perception of delirium using a validated screening tool. The rationale for the use of the ICDSC instead of the CAM-ICU tool was not discussed. Results from this study indicate that the CAM-ICU was well received by nurses who felt that delirium assessment and treatment was an important part of ICU care. This was despite the thoughts of many that the CAM-ICU was no more accurate and more difficult and time consuming to perform than their own unstructured assessments. These results describe the validity and reliability of the CAM-ICU for accurately detecting the presence of delirium when used by specially trained nurses.

These study results align with the concept of health within the Humanistic Nursing Theory. Patients' health is necessary for survival, and becomes the goal of nursing. Maintaining the dignity of patients throughout care is the emphasis of this concept (O'Connor, Patterson, & Zdehard, 2007). Implementation of assessments using tools that accurately address delirium, and putting into place interventions that prevent negative outcome is a way to maintain patients' dignity.

Nurses' Involvement Yields Compliance

Three studies revealed that the involvement of staff nurses (nurse educators) as champions, providing real time auditing and accuracy of delirium assessment, and feedback during the research process increased compliance of assessment by bedside nurses (DiLibero &

Desanto, 2016; Eastwood et al., 2012; Vasilevskis et al., 2011). Nurses were empowered when practitioners were influenced to treat delirium afforded by an objective measurement based on nursing assessment. The validation of nursing assessment by practitioners yielded increased compliance with assessment (Eastwood et al., 2012).

This finding of nurse involvement can be analyzed through the concept of nursing. Patients and nurses share a unique lived human experience. This intricate experience between patients and nurses is described by the humanistic theorists as an inter- human transactional dialogue of helping (Zane & Denise, 2013). When nurses are present (mind, spirit, and body), a dialogue is experienced between nurse and patient. The nurturing of this dialogue allows nurses to catch on to subtle mumbling of an otherwise oriented patient and move to proceed with further assessments to improve the patient's outcome.

Team Approach Increases Interventions

Four studies emphasized team approach as key to successful implementation of delirium assessment (Moy, Zimmerman, & Thomas, 2017; Ozsaban &Acaroglu, 2016; Rowley, 2017: Salem & Wesley, 2017). When practitioners acknowledged the results of nurses' assessment of delirium and provided intervention for delirium based on those assessments, there was an increase in compliance with delirium assessment among nurses. Providers' incorporation of the CAM-ICU tool in their orientation to the ICUs yielded increased interventions based on nursing assessment scores (Rowley, 2017).

The results addressed here place a perspective on the concept of the caring environment. Patients' healing improves based on the time and space in which the nursing experience takes place. O'Connor, Patterson, and Zdehard (2007) suggest that the nursing dialogue is reinforced when nurses understand how patients relate to their space. Assessment of patients, and

implementation of interventions from a team approach help nurses understand how patients relate to their environment within the ICU setting.

Ongoing Education Builds Confidence

The results of five studies indicated that though nurses viewed delirium as a serious problem, they considered themselves average in their competency level of delirium assessment (Christensen, 2014; Elliot, 2014: Speed, 2015: Trogrlic et al., 2017; Vasilevskis et al., 2011). The lack of confidence in the application of the assessment tool decreased the number of nurses that carried out pre-intervention delirium assessment in these studies. Educational intervention at the bedside impacted ICU nurses' delirium assessment knowledge and increased nurses' compliance with delirium assessment using the CAM-ICU tool (Christensen, 2014; Selim & Wesley, 2017). Bedside nurses' measurements of delirium and sedation are sustainable and reliable sources of information if policies and guidelines are established, with ongoing periodic education. Education on delirium assessment using the CAM-ICU tool at the point of practice routinely is set to yield compliance from nurses and improved timely interventions for better patient outcomes (Trogrlic et al.,2017; Vasilevskis et al., 2011).

Focus on the concept of person (viewing patients as unique individuals) can be analyzed through these results. Keeping patients in focus as individuals, dynamic, and full of creativity instills quality care that pushes for ongoing education of nurses at the point of care that will yield positive patient outcomes.

Strengths and Weaknesses of the Literature

The Johns Hopkins Evidence Appraisal scale (Dearholt & Dang 2012) was used to define the level of evidence before, and the quality of the results included in this literature review. All studies included in this literature review were levels I, II, & III. The quality of the chosen studies

was either good, or high quality. High quality studies had a good sample size, with clearly defined conclusions and results. Evidence deemed good had a fair sample size, defined results and conclusion. Because of the type of research question, most of the studies included in this review were survey designs.

Experimental and quasi-experimental studies with good sample size were rated high or good quality based on their sample size and clearly defined results. Clear results and conclusions served as strengths of these studies, based on their before and after trials. One qualitative study was included because it gave the researcher a different perspective on why nurses are not performing delirium assessment. The uniqueness of this study was its strength. The quality attributed to this evidence was low due to the high risk of bias and lack of scientific support for this qualitative research. The author included one literature review in this work based on the significance of its findings to the research question, and the alignment of the result this study shared with other studies included in this review. The purposeful choice of studies conducted in randomized locations gave the author a ground for generalizing major findings supported by the study's results.

A common limitation with the survey design included in this review could be respondents' bias. Respondents to surveys could either be in favor of the topic, or totally against it. Their position could influence their participation. One of the study's results showed that out of 149 surveys sent out, only 33 were returned. The previously mentioned bias could have attributed to this response rate. Another common limitation noted with the studies was the lack of randomization of sample for individual studies. Studies results were based on specific areas, for example-a 16 bed ICU unit, or a sample of 53 nurses in a South-East Asia ICU. This

randomization fed into the strengths of this literature review, overall, but limited the results of the individual studies.

Summary

Concepts of the Humanistic Nursing Theory were used in this chapter to analyze findings from this literature review. This critical review of the literature resulted in four categories of findings. The strengths and weaknesses of the evidence were critiqued and synthesized in this chapter. The next chapter will discuss the significance of the findings and implications for nursing practice and research.

Chapter Four: Discussion, Implications, and Conclusions

This chapter of the literature review will synthesize the findings gathered through the research process by addressing historical patterns and current trends in practice. Gaps in the literature related to findings from research studies on nursing assessment and interventions for ICU delirium will be addressed. The chapter concludes with implications for nursing practice and recommendations for nursing research.

Historical Patterns and Current Trends

Historically, delirium has been incorrectly viewed by health care providers as a normal reaction by patients to a life-threatening situation and care in the ICU (Robert, 2001). Delirium is identified as an independent predictor of ongoing impairment leading to increased mortality rate among ICU patients. Results from the study conducted by Soja et al. (2008) to test the reliability and compliance of delirium assessment among ICU nurses found that out of 601 nurses surveyed, only 3% thought it was important to screen for delirium, though it was commonly agreed among the nurses that delirium is an underdiagnosed problem requiring timely intervention. Delirium is associated with increased length of ICU stay, yielding higher cost of care (Roberts, 2001; Wells, 2012). The disparity between nursing assessment for delirium and interventions that would improve patient outcomes has resulted in the recommendation from The American Society of Critical Care Medicine that all intensive care patients be screened for delirium using a standardized tool (Pun, 2017; Salem & Wesley, 2016; Wells, 2012).

In 2001, the CAM-ICU tool and the ICDSC were validated for accurately assessing delirium in verbal and non-verbal patients. Both screening tools have been found to be easy to use with high compliance rates following education of nursing staff (Roberts, 2001). Pun et al. (2005) found that 90% of nurses were still completing delirium assessments at least every 12

hours, six months after implementing the CAM-ICU tool. Vasilevskis et al. (2011) concluded that bedside nurses' assessment of delirium using standardized tools was reliable and sustainable. Pun et al. (2005) concluded in a study to assess delirium screening among bedside nurses that with minimum training, delirium screening was excellent.

Gaps in the Literature

Earlier studies show that nurses are not performing delirium assessment using a standardized tool (Christensen, 2014; Elliot, 2014; Marino et al. 2015; Salem & Wesley, 2016) Speed, 2014). These studies conclude that ongoing nursing education is recommended to improve practice and outcome. More recent studies indicate that nurses can carry out accurate assessment using standardized tools (Martinez, 2017; Moy et al. 2017; Rowley, 2017). Evidence is missing that would indicate how consistently nurses should carry out the assessments and interventions and how often education is needed to buttress that practice.

Implications for Nursing Practice

Implementing standardized assessment tools for ICU delirium promotes evidence-based practice. The CAM-ICU tool and the ISDSC tool have been validated to accurately assess delirium (Wells, 2012). Implementing current evidence-based practice into the clinical environment requires persistent encouragement from clinical nurse educators, and collaboration with the health care team. Eastwood et al. (2012), in a study to evaluate the attitude of Australian critical care nurses' response to the introduction of the CAM-ICU tool, concluded that the support of providers by implementing interventions for delirium based on nurses' objective assessment increased compliance of assessment from nurses. Ongoing education to change the mindset of the healthcare team regarding ICU delirium will produce consistency in evidence-

based practice. Assessment for delirium improves quality of care, and is a cost-effective way within the nursing scope of practice to improve patient outcomes.

Recommendations for Nursing Research

Further research to investigate consistent and proper use of assessment tools in the Intensive Care setting and the frequency at which ongoing education of nurses and other ICU care team members should be carried on will be beneficial.

Summary

Historical patterns and trends in assessing ICU delirium were addressed in this chapter. The lack of delirium assessment by ICU nurses along with increased negative outcome of delirium among ICU patients prompted the recommendation from the American Association of Critical Care Medicine for routine assessment of delirium among ICU patients using a standardized tool. The CAM-ICU tool and the ISDCS tools are both validated for accurately assessing delirium. Nurses are performing more delirium assessment with minimal training and collaboration from providers. A gap exists in the research that would show how consistently delirium assessment is carried out in the ICU setting and how often education should be carried out to improve accuracy and compliance. Further research to investigate the consistency of the screening and the timeline for ongoing nursing education is recommended

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Appendix A: Evidence Synthesis of Matrix

Source:
Andrews, L., Silva, S. G. Kaplan, S., & Zimbro, K. (2015). Delirium monitoring and patient outcomes in a general intensive care unit. *American Journal of Critical Care, 24*(1), 48-56. doi:10.4037/ajcc2015740

Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
To evaluate the implementation and effects of the Confusion Assessment Method for the Intensive Care Unit as a bedside assessment for delirium in a general intensive care unit in a tertiary care hospital **Sample/Setting:** The study was conducted on the 16-bed ICU unit of Norfolk General Hospital. Charts of all patients 18 to 89 years old admitted to the general ICU during the 3 months before (September 15 to December 15, 2011) implementation of the new delirium screening procedure and sedation scale and a 3-month period after implementation (September 15 to December 15, 2012) were considered for inclusion in the sample. Paired observations were performed on 4 randomly chosen patients by the clinical nurse specialist and the pharmacist every other week during the 3month period, yielding a sample of 21 (3 patients chosen were out of the unit during one of the observations). **John Hopkins Evidence Appraisal** Level of Evidence II Quality: Good	A 2-group pretest posttest design was used for this study. The validity of the CAM-ICU scores obtained by bedside nursing staff was assessed by the clinical nurse specialist and the pharmacist, who obtained paired CAMICU scores independently within 1 hour of the nurse. Results were compared.	**Results:** Nurses used the CAM-ICU to screen for delirium 76 % of the time expected (at least once per shift) during the 3-month period. Precision of interobserver agreement was measured. The results showed agreement between the ICU nurses and the clinical nurse specialist (=0.86), the ICU nurses and the pharmacist (=0.71), and clinical nurse specialist and the pharmacist (= 0.78). The high correlation of results between ICU nurses and Pharmacist, and ICU nurses and Clinical Nurse specialist indicates accuracy of delirium assessment in the post test period, which was after the implementation of the new screening procedure. **Conclusion:** The CAM-ICU is a valid and reliable tool for detecting the presence of delirium when used by specially trained research nurses. Effective performance of the CAM-ICU by bedside staff requires a multidisciplinary plan with continued reinforcement and education.	**Strengths:** The CAM-ICU was included through this research as part of Physician's orientation process to the ICU. **Limitations:** The lack of CAM-ICU scores indicative of delirium being available to physicians may have contributed to a lack of change in the outcome after the implementation of CAM-ICU tool. A multi-disciplinary approach was not used in this study as was with other studies. The multidisciplinary rounding in the ICU environment does not allow for consistency in physician's practice**.** This uncontrollable factor could have limited the consistency in the implementation of the delirium assessment tool.

Author Recommendations: A follow up prospective design is recommended by the authors to further assess the effective implementation of the CAM-ICU tool. Assessing Physician's knowledge of the CAM-ICU tool will be beneficial for future research.

Implications: Nurses need reinforcement and continued education to consistently and accurately assess patients for delirium in the Intensive care unit. A multidisciplinary approach is key to achieving this result.

Source:
Brenda T, P., Sharon M, G., Josh F P., Ayumi K, S., James C, J., Julie, F., & E W, E. (2005). Large scale implementation of sedation and delirium monitoring in the intensive care unit: A report from two medical centers. *Critical Care Medicine, 33*(6), 1199-1205

Purpose/Sample	Design(Method/Instruments)	Results	Strengths/Limitations
Purpose: To implement delirium and sedation monitoring using the critical care monitoring guideline and to evaluate delirium monitoring against organizational practice **Sample/Setting:** The medical ICUs at two institutions: the Vanderbilt University Medical Center (VUMC) and a community Veterans Affairs hospital (York-VA). Seven hundred eleven **patients** admitted to the medical ICUs for >24 hours and followed over 4,163 days during a 21-month study period 64 **nurses** (40 at VUMC and 24 at York-VA) were part of the study **Johns Hopkins Evidence Appraisal** Level of Evidence: II Quality Good	A Prospective Observational Cohort study **Unit**-wide nursing documentation was changed to accommodate a sedation scale (Richmond Agitation-Sedation Scale) and delirium instrument (Confusion Assessment Method for the ICU). A 20-min introductory in-service was performed for all ICU **nurses,** followed by graded, staged educational interventions at regular intervals. Data were collected daily for compliance, and randomly 40% of **nurses** each day were chosen for accuracy spot-checks by reference raters. An implementation survey questionnaire was distributed at 6 months.	Compliance with the RASS was 94.4% at VUMC and 99.7% at York-VA. Compliance with the CAM-ICU was 90%at VUMC and 84% at York-VA. The CAM-ICU was performed more often than requested on 63% of shifts at VUMC and on 8% of shifts at York-VA. Overall weighted-kappa between bedside nurses and references raters for the RASS were 0.89 (95% confidence interval, 0.88 to 0.92) at VUMC and 0.77 (95% confidence interval, 0.72 to 0.83) at York-VA. Overall agreement (kappa) between bedside nurses and reference raters using the CAM- ICU was 0.92 (95% confidence interval, 0.90-0.94) at VUMC and 0.75 (95% confidence interval, 0.68-0.81) at York-VA. The two most-often-cited barriers to implementation were physician buy-in and time. Barriers to use of the tool included nurses' lack of confidence in performing the assessment, concerns about use of the tool in patients receiving mechanical ventilation, and lack of interdisciplinary response to findings obtained with the tool **Conclusion:** With minimal training, the compliance of bed side nurses using sedation and delirium instruments was excellent. Lessons learned and barriers to adoption and use, however, were identified.	**Strengths:** The strengths in the study are linked to the varied hospital settings and the inclusion of all nurses in both ICUs. The research involved 64 nurses from two institutions who cared for greater than 700 patients for greater than 4000 ICU days. The two settings-a large university hospital and a small community hospital could build generalization to the hospital population. **Limitations:** Patients with known dementia, or primary neurological disease were not included in this study which could be considered a limitation, in that these diagnoses could confound the diagnosis of delirium.

Author Recommendations:
Further research is recommended to examine the improvement of clinical outcome through monitoring with interventions.

Implications: Education of nurses increases compliance rates of assessment for delirium using the CAM-ICU tool. Acute care nurses play a major role in the cognitive assessment of critically ill patients.

Source:
Christensen, M. (2014). An exploratory study of staff nurses' knowledge of delirium in the medical ICU: An Asian perspective. *Intensive & Critical Care Nursing, 30*(1), 54-60 7p. doi: 10.1016/j.iccn.2013.08.004

Purpose/Sample	**Design(Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: The author's aim is to assess ICU nurses in Asia knowledge of delirium, and to find out whether demographics had an impact on their knowledge. **Sample/Setting:** 53 staff nurses from a 13 bed MICU Tertiary teaching hospital in South East Asia. **Johns Hopkins Evidence Appraisal** Level of Evidence: III Quality: Good	A descriptive design with a 40 item, 5-point Linkert questionnaire. The questions aimed at determining nurses' knowledge of the signs and symptoms, risk factors, and outcome of delirium. The input from 2 geriatric practitioners, 1 Neurologist, 1 Psychiatrist and 3 ICU Registered Nurses were sought to ensure the validity of the content of the instrument within the setting. After review by the experts, the questions were reworded to maintain reliability of the instrument.	Nurses with a Bachelor's degree answered the most questions with most them hailing from the Philippines. 96%, n=50 could state the signs and symptoms of delirium. 12%, n=6, of the sample of nurses recognized the clinical symptoms of delirium. The mean score for identifying the risk factors for delirium was 63.8%, n=35. There was no statistical difference for identifying delirium risk factors based on the demographics of the nurses. The ability to predict negative outcome of delirium based on nurses' demographics was high at 75%, n=39 **Conclusion:** The author concludes that education on delirium using a structured assessment tool be at the point of practice. Nurses within this setting viewed this as an extra workload. The author stresses the need for a fresh approach to delirium education and compliance with assessment.	**Strengths:** The results indicate that nurses' view the assessment tool as another task to be carried out with time constraints. This research reveals that the decision-making process around the assessment of delirium should be addressed with multidisciplinary staff, and adopted as ICU culture. **Limitations:** The purposeful sampling, the small sampling size, and the sampling restriction to one hospital limit the generalization of the findings to the rest of the population.

Author's Recommendation: Further studies to evaluate delirium education at the bedside are recommended.
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Implications: Nurses need re-education on using delirium assessment tool to consistently perform the assessment. Education for delirium assessment should be carried on at the bedside.

Source:
DiLibero, J., O'Donoghue, S., & DeSanto-Madeya, S. (2016). Comparative effectiveness of a nurse driven intervention on the accuracy of delirium assessment in medical ICU patients. *Nursing Research 65*(2*),* E80-E81

Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: To determine the effectiveness of an intervention to improve the accuracy of delirium assessments using the CAM-ICU tool Determine the comparative effectiveness of the intervention across medical and surgical populations **Sample/Setting:** The study was completed in an urban tertiary academic medical center in the northeast United States, in the medical and surgical ICUs. **Johns Hopkins Evidence Appraisal** Level of Evidence: II Quality: High Quality	A pretest Y post-test design was used. Nurses and physicians received didactic education on delirium, evidence-based guidelines, the CAM-ICU tool, and the brain roadmap. Staff-nurse champions conducted real-time auditing on the accuracy of delirium assessments and provided real-time feedback to staff. Pretest and posttest data were evaluated for differences in assessment accuracy. Differences in accuracy were stratified according to patients' level of sedation and were evaluated by independent t-test.	635 baseline observations (236 MICU/CCU, 399 SICUS) and 649 post-intervention observations (649 MICU & SICU) were collected. Baseline accuracy was 70.31% among all patients in the MICUs and CCU and 53.49% among agitated and sedated patients in the MICU and CCU. Baseline assessment accuracy was lower in the surgical ICUs at 44.61% among all patients and 20.11% among patients with an altered RASS. Post intervention assessment accuracy improved to 95.51% and 89.23% ($p<0.01$) among all patients and sedate/agitated patients respectively in the MICUs and CCU. Phase II is currently underway. **Conclusion:** The results demonstrate a difference in baseline delirium assessment accuracy may exist between patient populations in ICUs	**Strengths:** The involvement of staff nurses (nurse educators) as champions, providing real time auditing and accuracy of delirium assessment and feedback during the research process served as a strength for this research. **Limitations:** The sample size though large, was not more randomized. The patient population, nurses and Physicians were from an Urban setting only.

Author Recommendations: A phase II research work is underway for comparison of results. Further research is needed to explore factors which may contribute to difference in baseline delirium assessment accuracy.

Implications: Making nurses champions of implementation of delirium assessment, and giving real time feedback improves assessment of patients.

Source:
Eastwood, G. M., Peck, L., Bellomo, R., Baldwin, I., & Reade, M. C. (2012). A questionnaire survey of critical care nurses attitude to delirium assessment before and after introduction of the CAM-ICU. *Australian Critical Care Nurse 25*(3), 162-169. doi.10.1016/jaucc.2012.01.005

Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: The study aimed at assessing the attitude of Australian critical care nurses' response to the introduction of the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) **Sample/Setting:** Australian Tertiary Teaching Hospital ICU. **Johns Hopkins Evidence Appraisal** Level of Evidence: II Quality: Good	A survey pre-and post-educational intervention was carried out to measure compliance in using the CAM-ICU assessment. 174 nurses in the ICU using two questionnaires: first after a one-month period of mandated but unstructured delirium assessments, and then following one month of CAM-ICU assessments. Antipsychotic medication uses as interventions following the CAM-ICU assessment was quantified using pharmacy record.	The first survey response rate was37%. Most nurses 73% thought active delirium assessment was important, and 93% thought their assessments were worth the time. The assessments were largely unstructured, as only 20% knew a formal delirium test, and only 7% sometimes used one. The second survey response rate was 26%. Most 89% still thought delirium assessment was important, but only 75% thought the CAM-ICU worth the time required (p=0.01 compared to unstructured assessments). Similar proportions 75% and 73% were confident in the accuracy of their assessments. Many (33%) found the CAM-ICU 'quite' or 'very' hard to perform, though, 82% wanted to continue to use it. Free-text answers suggested this was because medical staff paid more attention to the CAM-ICU. Supporting this, prescriptions of antipsychotic medications increased significantly in the CAM-ICU period. Nurses were more willing to use the CAM-ICU assessment in the post test period due to timely interventions from Physicians. **Conclusion:** The CAM-ICU was well received by nurses who felt that delirium assessment and treatment was an important part of ICU care. This was despite the thoughts of many that the CAM-ICU was no more accurate, and yet more difficult and time consuming to perform than their own unstructured assessments. The empowerment in influencing doctors to treat delirium afforded by an objective measurement was likely part of the explanation of the result.	**Strengths:** There was a notable increase treatment of delirium with pharmacological interventions when the CAM-ICU structured assessment was implemented. Great value was placed on results of the structured assessment by the qualitative part of the research questionnaire **Limitations:** The research had a low response rate introducing the possibility of responders' bias. It is likely that responders to the survey were interested, either in favor of the CAM-ICU assessment, or opposed to the introduction of a new assessment in their work environment.

Author Recommendations There is a need for longitudinal studies over months to years. Additionally, whether diagnosing delirium using another formal technique would produce a similar effect, perhaps with less concern over competency and time requirement, is worthy of investigation.

Implications: When nurses recognize that their assessments are valuable to implementation of interventions by doctors, they will be more willing to implement the structured assessment s to provide the best results for patients.

Source:
Elliot, S. R. (2014). ICU delirium: A survey into nursing & medical staff knowledge of current practices & perceived barriers towards ICU delirium in the intensive care unit. *Intensive & Critical Care Nursing, 30*(6), 333-338. doi: 10.1016/j.iccn.2014.06.004

Purpose/Sample	Design (Method/Instruments)	Results	Strengths/Limitations
Purpose: The purpose of this study is to determine nursing & medical staff knowledge and use of the CAM-ICU tool for delirium assessment and to examine barriers that prevent the tools. **Sample/Setting:** The sample consisted of 149 nursing & medical staff from 3 districts ICU units in the United Kingdom. **Johns Hopkins Evidence Appraisal** Level of Evidence: III Quality: Good	A survey design was used. A specific questionnaire was developed to conduct this study with 3 sections that covered demographics, knowledge of ICU delirium, & use of validated screening tools. The questionnaire was tested for reliability using a pilot testing sent out to 7 peers prior to the start of the study.	The data indicated that 44% (n = 33) of the respondents had never received any training or education on ICU delirium prior to completing the questionnaire. Further analysis revealed that 48% (n = 24) of these were nurses compared with the medical staff (32%, n = 8). Table 1 shows there was a significant association between hospitals B and C with time since last receiving delirium education $2(4) = 16.36$ ($p < 0.01$). Consequently, hospital B appears to have a higher proportion of its staff educated on ICU delirium within the last year (64%, n = 18) compared with hospital A who had 26% (n = 6) and hospital C 17% (n = 4). For those who had been educated bedside teaching appeared to be the most popular way of teaching 42% (n = 25), followed by tutorials 18% (n = 11). Respondents from hospital C revealed that 70% (n = 16) were either unconfident or very unconfident at detecting delirium without the use of a screening tool. Whereas hospital A reported that 56% (n = 15) and hospital B reported that 66% (n = 19) were either unconfident or very confident at detecting delirium without the use of a screening tool. **Conclusion:** Most of the respondents lacked education on ICU delirium. The CAM-ICU delirium screening tool was only being performed in one out of the three sites surveyed and its use was found to be, at best, sporadic. This fails to adhere to current ICU delirium guidelines Education impacted ICU nurse's delirium knowledge. Nurses consider themselves average in their competency level for delirium assessment.	**Strengths:** The strength of this research was its ability to address not only nurses' use of the assessment tool, but also their knowledge of delirium, and their knowledge of the CAM-ICU tool. **Limitations:** The response rate from the sample was small. Greater response could have been sought by putting the questionnaire in sealed envelopes and addressing them to the individuals. The questionnaire took 6-9 minutes to complete, which could have dampened the response rate.

Author Recommendations:
Further research to assess the consistent use of delirium assessment strategies.

Implications: Bedside teaching is the most relevant method for teaching ICU delirium. ICU delirium needs acceptance and multidisciplinary team effort.

Source:
Hickin, S. L., White, S., & Knopp-Sibota, J. (2017). Nurses' knowledge and perception of delirium screening and assessment in the intensive care unit: long-term effectiveness of an education based knowledge translation intervention. *Intensive and Critical Care Nursing,* 4143-49. doi: 10.1016/j jccn.2017.03.010

Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitation**
Purpose: To determine the impact of education on nurses' knowledge of delirium**,** knowledge and perception of validated screening tool and delirium screening in the ICU. **Sample/Setting:** A 16 bed **ICU** in a Canadian urban tertiary **care** center. 125 certified critical care nurses met the criteria for the study. **Johns Hopkins Evidence Appraisal** Level of Evidence: II Quality: High	A quasi-experimental single group pretest-post-test design Nursing knowledge and perception were measured at baseline, 3-month and 18-month periods. Delirium screening was then assessed over 24-months. Surveys were used to measure results. 197 surveys were returned; 84 at baseline, 53 at 3-months post education, and 60 at the final assessment period 18-months post intervention.	There was significant improvement in knowledge scores at three months post intervention ($p < 0.001$). Scores at the 18-month follow-up were significantly lower than the three-month period but not statistically different from those at baseline ($p = 0.72$). There were no significant differences in knowledge scores related to age, nursing experience or ICU experience. The findings demonstrate an increase in nursing knowledge of delirium and the ICDSC after the educational intervention consistent with previous studies that also used multifaceted education programs. Education affected some aspects of nurses' perception of delirium and the ICDSC, while time has a greater impact in other areas. **Conclusion:** Understanding of delirium and routine screening with an objective screening tool, such as the Intensive Care Delirium Screening Checklist(ICDSC), an alternative tool to the CAM-ICU, is essential in identifying patients with, or at risk for developing delirium education is effective in improving delirium knowledge and screening**;** however, without sustained effort, progress is transient.	**Strengths:** There were positive changes noted in delirium screening through this research which could be due to the focus on revitalizing an existing tool, versus introducing a new tool into practice. **Limitations:** Data were collected as part of a larger organization-based QI initiative, there was no opportunity to modify data parameters and collection methods. Secondly, the incorporation of a control group was not feasible as the QI initiative was mandated to target the entire ICU nursing population. Finally, the day-to-day operation of a health care system presents factors that cannot be controlled for in a longitudinal study such as this.

Author Recommendations: Future studies should examine the most effective "dose" of delirium-based education in the ICU to effect more sustainable long-term change.

Implications: Without regular formal reinforcement over the long term, the observed improvement in delirium assessment knowledge is not maintained. Nursing educators need to incorporate continuing education within the ICU.

Source:
Marino, J., Bucher, D., Beach, M., Yegneswaran, B., & Cooper, B. (2015). Implementation of an intensive care unit delirium protocol. *Dimensions of Critical Care Nursing, 34*(5), 273-284.doi: 10.1097/DCC.0000000000000130

Purpose/Sample	Design (Method/Instruments)	Results	Strengths/Limitations
Purpose: The purpose of this pilot project is to develop, implement, and evaluate a nursing education program for the critical care nurses that presented a protocol for the prevention and management of delirium in adult ICU patients, as well as improve nurses and family comfort and compliance using a standardized evaluation method for delirium and intervention care bundle. **Sample/Setting:** 49 bedside critical care nurses from 3 ICUs at the University of Pennsylvania Medical Center. **Johns Hopkins Evidence Appraisal** Level of Evidence: II Quality: Good	A training program for bedside critical care nurses was developed and implemented. A 15-item multiple choice test following the implementation of the delirium screening and care bundle protocol was administered. Nursing staff comprehension with screening and care bundle item was measured as well as overall incidence of positive delirium screenings among all screenings performed. Pre-educational nursing attitude and post education nursing attitude and self confidence levels regarding delirium care were measured using a 5-point Likert scale. The Likert scale is a tool that is validated ad used in other studies for its reliability	All 5-nursing attitude and perceived confidence statements measured before and after the educational sessions showed a significant increase in positive perceptions overall (P G .0001). Overall mean post education knowledge test raw scores showed a significant improvement from pre-educational scores (70%T 12.8%vs 95%T 6.9%; P G .0001). Once-daily ICU delirium screenings and care bundle interventions were initiated for all ICU patients; overall compliance during the measurement period was 56.3% (598 of 1061 possible delirium screenings and protocols completed). Of all daily patient screenings performed, 20.4% resulted positive for ICU delirium **Conclusion:** 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.	**Strengths:** All patients receiving screenings, for delirium received the care bundle interventions (blocked sleep, early mobilization, re-orientation) based on their needs. This supports the idea that patients who are delirious, and non-delirious receive the care bundle because the intervention does not only prevent delirium, but also decreases its duration. **Limitations:** The knowledge assessment tool was newly developed, and was only validated for poor staff compliance with delirium screening and protocol implementation. Due to update in the electronic health record, the protocol implementation phase of the research was cut short to avoid duplication of documentation of delirium screening.

Author Recommendations:
A complete analysis of compliance with delirium screening with the integrated tool is recommended.

Implications: Interventions for delirium based on delirium assessment such as the ABCDE bundle of care is undergoing changes. Additional education will be necessary to provide bedside critical care nurses updated information regarding evidence based clinical practice.

Source:
Martinez, F., Donoso, A. M., & Marques, C. (2017). Implementing a multicomponent intervention to prevent delirium among critically ill patients *Critical Care Nurse 37*(6), 36-47

Purpose/Sample	**Design (Method/Instrument)**	**Results**	**Strengths/Limitations**
Purpose: To assess the efficacy and describe the implementation strategy of a multicomponent intervention to prevent delirium in an intensive care unit **Sample/Setting:** A sample of 350 critically ill patients admitted to an 8-bed surgical ICU were recruited for the study. **Johns Hopkins Evidence Appraisal** Level of Evidence: II Quality: Good	A before-and-after study was conducted in an intensive care unit between May 2014 through August 2015. Adult participants were enrolled consecutively, excluding only those who refused to participate. Patients enrolled after August 31, 2014, received a multicomponent intervention aimed at minimizing risk factors for the development of delirium. Participants were recruited until August 31, 2015. Nurses assessed delirium every 12 hours with the CAM-ICU. This tool was selected this because of its diagnostic accuracy and negligible interobserver variability. Tailored interventions included early mobilization, physical therapy, reorientation, cognitive stimulation, drug reviews, environmental stimulation, avoidance of sensory deprivation, pain control, restraint use avoidance, and family participation.	Multivariate logistic regression was used to control for confounders. The study included 227 patients (54.7% male; mean [SD] age, 63.3 [18.3] years). Tailored interventions with frequent assessments significantly reduced delirium (from 38% to 24%; relative risk, 0.62; 95% CI, 0.40-0.94; P = .02), an association that remained significant after adjusting for confounders. Adherence rates were more than 85% in all intervention domains (except daily reorientation) that were overseen by health care providers. Conclusion: Tailored interventions with timely assessment was successful in reducing delirium. Inadvertent self-removal of interventions decreased.	**Strengths:** Logistic regression analysis was used to control for apparent confounders. Conclusions were not drawn in terms of end points such as long term survival, or cognitive outcome. Before and after feedback was consistent throughout the research process. **Limitations:** The lack of randomization and the possibility of imbalance between study groups was a point of limitation for this study.

Author Recommendations:
Future studies aimed at tailoring multicomponent interventions for the critical care setting should take these outcomes into consideration.

Implications: Early participation of the whole team, shared leadership, and the provision of concrete tasks were key to the success of this multicomponent interventions to reduce delirium.

Source:
McDonnell, S., & Timmins, F. (2012). A quantitative exploration of the subjective burden experienced by nurses when caring for a patient with delirium. *Journal of Clinical Nursing 21*(17-18*),* 2488-2498 doi: 10.1111/j.1365-2702.2012.04130x

Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: The **aim** of this study is to examine the subjective burden experienced by nurses when they provide care for patients with acute delirium. **Sample/Setting:** The Strain of Care for Delirium Index (SCDI) was used to collect data in 2007 from a random sample of the national **nurses'** register (n = 800), in the Republic of Ireland. **Johns Hopkins Evidence Appraisal** Level of Evidence III Quality: High	The study was descriptive and retrospective, adopting quantitative research methodologies. The Strain of Care for Delirium Index (SCDI) was used to collect data in 2007 from a random sample of the national nurses**'** registry.	The subjective burden that nurses experience when caring for patients with delirium was high (M = 2·97). The hyperactive/hyperalert subscale was deemed the most challenging to deal with (M = 3·41). In relation to individual behaviors, the patients who averaged highest in terms of burden are those who are uncooperative and difficult to manage. **Conclusion:** This study represents the first reported measurement and examination of the subjective burden nurses experience when caring for patients with delirium**,** following initial development and testing of a sensitive tool Findings outlined the subtypes and behaviors that increase the burden of caring for patients with delirium.	**Strengths:** This study highlights and confirms that nursing patients with delirium is challenging for nurses**.** It raises awareness of the practice and policy implications of nurses**'** potential negative reactions to these patients. **Limitations:** The limitation of the study lies in the quantitative nature of the study and the conclusions drawn from nurses' subjective reports which could be highly biased.

Author Recommendations:
Further research is needed to explore the impact of nurse reaction further, and to identify supportive and preventive measures for nurses. A research to explore high level of strain needs among nurses is recommended.

Implications:
This research gives insight into the lack of assessment and interventions from nurses regarding patients' delirium from a subjective perspective. It highlights and confirms that nursing patients with delirium is challenging for nurses. It raises awareness of the practice and policy implications of nurses' potential negative reactions to these patients It highlights the need for additional training and education to ensure that nurses understand delirium to provide early detection, and promote intervention.

Source:
Mo, Y., Zimmerman, A.E., & Thomas, M. C. (2017). Practice, patterns, and opinions on current clinical practice guidelines regarding the management of delirium in the intensive care unit *Journal of Pharmacy Practice 30*(2)*,* 162-171 doi:10.1117/0897190015625396

Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: To determine current delirium practices in the intensive care unit **(**ICU**)** setting and evaluate awareness and adoption of the 2013 Pain, Agitation**,** and Delirium (PAD) guidelines with emphasis on delirium management **Sample/Setting:** A large-scale, multidisciplinary, online survey was administered to physician, pharmacist, nurse, and mid-level practitioner members of the Society of Critical **Care** Medicine (SCCM) between September 2014 and October 2014. A total of 635 respondents completed the survey. **Johns Hopkins Evidence Appraisal** Level of Evidence: III Quality: Good	A survey method. The survey questionnaire was developed by 3 clinical pharmacists experienced in ICU sedation and delirium as well as practice-based research. It was then reviewed by other critical care practitioners (2 pharmacists, 2 nurses, and 1 physician) and their feedback, and comments about question format, structure, and clarity were incorporated. Approval for survey dissemination was obtained by the Society of Critical Care Medicine (SCCM) Research Committee.	Nonpharmacologic interventions such as early mobilization was used in most ICUs (83%) for prevention of delirium. Most respondents (97%) reported using pharmacologic agents to treat hyperactive delirium. Ninety percent of the respondents answered that they were aware of the 2013 PAD guidelines, and 75% of respondents felt that their delirium practices have been changed because of the new guidelines. In addition, logistic regression analysis of this study showed that respondents who use delirium screening tools were twice more likely to be fully aware of key components of the updated guidelines (odds ratio [OR] = 2.07, 95% confidence interval [CI] = 1.20-3.60). **Conclusion:** Most critical care practitioners are fully aware and knowledgeable of key recommendations in the new guidelines and have changed their delirium practices accordingly.	**Strengths:** The sample size for this research survey was relatively large as compares to similar ICU survey studies. **Limitations:** Though a large survey, the survey questionnaires were sent out only to Allied Health professionals practicing in large teaching hospitals. The results were based on participants reports which could be biased, and skew the results**.**

Author Recommendations: Further studies are warranted to examine the impact of the ICU PAD care bundle on patient outcome.

Implications: Results of this study indicate that there is a positive association between delirium protocol implementation in the ICU, and delirium screening.

Source:
Ozsaban, A., & Acaroglu R. (2016). Delirium assessment in intensive care units: Practices and perception of Turkish nurses. *Nursing in Critical Care, 21*(5), 271-278. doi: 10.1111/nicc.12127

Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: The aim of this study was to identify current practices and perceptions of intensive care nurses regarding delirium assessment and to examine the factors that affect these practices and perceptions. **Sample/Setting:** The study sample comprised 301 nurses from a Turkish Hospital. **Johns Hopkins Evidence Appraisal** Level of Evidence: III Quality: High	A descriptive, correlational study design was used. Data was collected from five Turkish public hospitals using a structured survey questionnaire	83% of respondents considered delirium a common and major problem in the ICU, several barriers for the implementation of delirium guideline were identified. More than half of the nurses performed delirium assessments. However, the proportion of nurses who use delirium assessment tools was quite low. Almost all the nurses perceived delirium as a serious problem for ICU patients. The patient group least monitored for delirium was that of unconscious patients. Statistically significant differences were found in the proportion of nurses who assessed delirium symptoms and whose care delivery system was patient - centered and perceived delirium as a serious problem. **Conclusion:** Most ICU nurses perceived delirium as a serious problem, the proportion of those who perform routine delirium assessments was less. It was found that delirium assessment practices of nurses were affected from their perceptions of delirium and the implementation of patient - centered care delivery.	**Strengths:** The results of this research provide the first view of current practices and perceptions of Turkish ICU nurses with regards to delirium assessment. **Limitations:** A survey form that was pilot tested and developed by the researchers was used for this research because there was not a suitable measurement tool with tested reliability and validity that could be adapted to the Turkish Society**.**

Author Recommendations:
Follow up studies using validated questionnaires tailored to the Turkish setting is recommended.

Implications:
Strategies that increase the routine use of delirium assessment tools and protocols could be developed. National guidelines regarding the diagnosis, prevention, care, and treatment of delirium may be developed to empower nurses. Presenting delirium assessment as part of patient centered care delivery rather than task based care delivery could contribute to compliance among nurses with delirium assessment.

Source:
Rowley-Conway, G. (2017). Critical care nurses' knowledge and practice of delirium assessment. *British Journal of Nursing 26*(7), 412-417.

Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: To establish current practice for assessment of ICU delirium, including tools used, frequency of assessment and recording of findings. To examine current knowledge of ICU delirium, including types, features and management strategies. To identify perceived barriers to effective assessment and management of ICU delirium. To establish any education received on the topic and analyze whether this has contributed to better knowledge and practice **Sample/Setting:** The study took place during August 2016 in the 14-bed medical-surgical critical care unit of a district general hospital. A self-reported questionnaire was distributed to critical care nurses (n=31). **Johns Hopkins Evidence Appraisal** Level of Evidence: III Quality: Good	A questionnaire survey design. A self-reported questionnaire was distributed to critical care nurses**.** Data were analyzed with descriptive statistics.	Overall, knowledge of risk factors for delirium received the highest scores, with 42% (n=13) of respondents scoring a good or excellent. Outcome knowledge was less comprehensive, with 32% (n=10) of scores ranked as good or excellent. 32% (n=10) received a score of poor for the question on features of delirium. In terms of practice, 39% (n=12) of respondents used the CAM-ICU assessment tool, while 23% (n=7) did not assess patients for delirium. The remainder (39%; n=12) used clinical observation to identify delirium. Regarding frequency of assessment, 23% (n=6) did not assess for delirium, while 52% (n=16) assessed their patient every shift,16% of respondents (n=5) assessed for delirium only if the patient appeared agitated, and the remainder (10%; n=3) assessed less frequently than once per shift. There were significant positive correlations between receiving education on delirium and knowledge of features (r=0.55, p=0.0012), knowledge of risk factors (r=0.67, p,0.0001). As education increased, the regularity of assessment increased.	**Strengths:** The questionnaire methodology used in this study facilitates comparison with other studies which fortifies the findings of this study. **Limitations:** The sample size was small, which may limit generalization to other areas, though the critical care unit was representative to other units, thereby making the results useful to clinicians elsewhere. **Conclusion:** It has been demonstrated that knowledge relating to delirium assessment is inadequate and that practice falls short of recommended guidelines. Several barriers to effective assessment have been identified, and can be targeted to improve practice. It has been shown that formal education on the topic leads to improved knowledge and practice, and this can be used to develop an educational intervention for nursing staff to address the deficits found, and promote best practice in line with national guidelines

Author Recommendations: To develop a formal written policy regarding ICU delirium assessment, including assessment tools to be used and frequency. Further research could investigate management strategies currently used locally, by surveying medical staff and address any deviations from recommended practice, or conduct focus groups of nurses to explore in more depth the issues raised.

Implications: Several barriers to the effective assessment of delirium have been identified through this study. These findings can be targeted to improve practice. It has been shown that formal education on delirium assessment improved nurses' knowledge and practice, and this can be used to address educational interventions by nurse educators addressing delirium assessment.

Source:
Selim, A, A., & Wesley Ely, E. (2017). Delirium the under-recognized syndrome survey of healthcare Professionals' awareness and practice in the intensive care units. *Journal of Clinical Nursing, 26*(576*),* 813-824, doi: 10.1111/jocn.13517

Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: To survey ICU health care professionals, and gather knowledge of their awareness of delirium occurrence, assessments, and interventions **Sample/Setting:** A sample of 168 intensive care unit nurses and doctors participated in the study. The survey took place at 11 intensive care units from academic and nonacademic governmental hospitals in Mansoura, Egypt **Johns Hopkins Evidence Appraisal** Level of Evidence: III Quality: High	Cross sectional survey. A semi structured questionnaire to survey their awareness, screening and management of delirium in intensive care units was developed. Content validity was performed by the original authors of the questionnaire through a panel of multidisciplinary experts in the field.	The mean score of delirium awareness was 64·4 ± 14·0 among intensive care unit healthcare professionals. Awareness of delirium was significantly lower when definition of delirium was not provided, among diploma nurses compared to bachelor degree nurses and physicians, among those who did not attend any workshop/lecture or read an article related to delirium and lastly, those who work in an intensive care unit when <50% of patients develop delirium**.** The survey found that only 26·8% of the healthcare professionals screen for delirium on a routine basis, and 14·3% reported attending workshops or lectures or reading an article related to delirium in the last year. In screening delirium**,** healthcare professionals did not use any tools, nor did they follow adopted protocols or guidelines to manage delirium. To manage delirium**,** 52·4% of the participants reported using sedatives, 36·9% used no drugs, and 10·7% reported using antipsychotics (primarily haloperidol). **Conclusion:** Intensive care unit healthcare professionals do not have adequate training or routine screening of delirium. There is an evident absence of using standardized tools or adapting protocols to monitor and manage delirium.	**Strengths:** Some questions in the survey were not answered in detail, therefore the data related to those questions were eliminated, and had no tangible impact on assessing health care professionals' awareness and practice of delirium. **Limitations:** The current research did not explore the barriers and challenges leading to decreased awareness, among nurses and their clinical practice of delirium assessment. The use of learning resources and colleague's help to complete the questionnaire was no**t** ruled out in this study.

Author Recommendations: Future research using large scale surveys are recommended to fully explore the barriers of health care workers awareness, and attitude towards delirium.

Implications:
The research has shed some light on the variable on the under-diagnosis and under-recognition of delirium by Health care professionals on the national level.

Source:
Soja, S. L., Pandharipande, P. P., Fleming, S. B., Cotton, B. A., Miller, L. R., Weaver, S. G., & Ely, E. W. (2008). Implementation, reliability testing, and compliance monitoring of the confusion assessment method for the intensive care unit trauma patients. *Intensive Care Medicine 34(7),* 1263-1268. doi: 10.1007/s00134-008-1031-x

Purpose/Sample	**Design(Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: To implement delirium monitoring, test reliability, and monitor compliance of performing the CAM-ICU in trauma patients. **Sample/Setting:** Level1 trauma unit of Vanderbilt University Medical center. Acutely injured patients admitted to the trauma unit between 1 February 2006 and 16 April 2006 **Johns Hopkins Evidence Appraisal** Level of Evidence: II Quality: Good	Prospective, observational study. After web-based teaching modules and group in-services, bedside nurses evaluated patients daily for depth of sedation with the RASS and for the presence of delirium with the CAM-ICU. On randomly assigned days over a 10-week period, evaluations by nursing staff were followed by evaluations by an expert evaluator of the RASS and the CAM-ICU to assess compliance and reliability of the CAM-ICU in trauma patients**.** Following the audit period, the nurses completed a postimplementation survey. The expert evaluator performed 1,011 random CAM-ICU assessments within 1 hour of the bedside nurse's assessments.	Nurses completed the CAM-ICU assessments in 84% of evaluations. Overall agreement (kappa) between nurses and expert evaluator was 0.77 (0.721-0.822; $p < 0.0001$), in TBI patients 0.75 (0.667-0.829; $p < 0.0001$) and in mechanically ventilated patients 0.62 (0.534-0.704; $p < 0.0001$). The survey revealed that nurses were confident in performing the CAM-ICU, realized the importance of delirium, and were satisfied with the training that they received. It also acknowledged obstacles to implementation including nursing time and failure of physicians/surgeons to address treatment approaches for delirium. Conclusion: The CAM-ICU can be successfully implemented in a university-based trauma unit with high compliance and reliability**.**	**Strengths:** The presence of Pharmacist, as a single expert evaluator increased the consistency among the expert CAM-ICU assessment. **Limitations:** Observations were completed by a single expert evaluator, whose presence may have led to increased compliance. Some evaluations were completed by the same nurses in the same patients which could have affected the estimation of the evaluations being completed in trauma patients.

Author Recommendations:
Potential pitfalls including time constraints and Physicians indifference to nursing assessment of delirium is recommended for further study as barriers to delirium monitoring.

Implications:
Routine delirium assessment should be carried on following the Society of Critical Care guidelines for critically ill patients.

Source:
Speed, G. (2015). The impact of a delirium educational intervention with intensive care unit nurses. *Clinical Nurse Specialist: The Journal for Advanced Nursing Practice, 29*(2). 89-94 6p.doi: 10.1097/NUR.00000000000106

Purpose/Sample	Design (Method/Instruments)	Results	Strengths/Limitations
Purpose: To examine ICU nurses' delirium knowledge at a Trauma hospital before & after teaching intervention **Sample/Setting:** N=89 ICU nurses, from a Level-1 Trauma hospital. A total of 27 nurses completed the pre- & posttest. **Johns Hopkins Evidence Appraisal** Level of Evidence: II Quality: High	Quasi-experimental pre- & posttest. The Nurses Knowledge of Delirium Questionnaire (NKDQ) was given pre- & post teaching, and the difference in knowledge was measured. The reliability & validity of the NKDQ had not been proven when this study was conducted, but the instrument has been used in 12 other countries.	There was a vast difference in pre- & post intervention test scores (mean, 74.65 SD 8.68), & post intervention scores (mean, 84.95, SD, 5.73); t (23) =-5.256, P=0.000. These results suggest that an educational intervention does have an impact on ICU nurses' knowledge level of delirium. **Conclusion:** If ICU nurses are not aware of the fluctuating nature of delirium and its varied clinical presentations, they cannot be expected to consistently identify its development when providing care. Through educational activities, it is possible to increase team member knowledge levels, potentially resulting in increased identification of delirium.	**Strengths:** The presence of the clinical nurse specialist to work through the sphere of influence and change the attitude of nurses towards the prevalence, risk factors, and appropriate use of screening tools for the assessment of delirium will potentially equip the health care team to address this issue. **Limitations:** The NKDQ has been used in 12 different countries, and translated into 7 different languages. The results of validity testing were not yet available at the time of this research study. The study was also conducted in one hospital's ICU which limits generalizing its result to the entire population**.**

Author Recommendations: Additional studies are recommended for educating nurses about delirium presentation, risk factors, assessment, and implications. Education should be based on the effective use of screening instruments, and the appropriate identification of delirium. Further interventional studies should include cost of care, patients' mortality, and incidences associated with delirium

Implications Delirium can have serious implications on patients' outcome and healthcare cost. It takes team effort, with nurses in the forefront to recognize delirium because of their interactions with patients, particularly in the intensive care setting. Education increases nurses' knowledge of delirium assessment.

Source:
Trogrlic, Z., Ista, E., Ponssen, H. H., Schoonderbeek, J. F., Schreiner, F., Verbrugge, S. J., & Jagt, M. (2017). Attitudes knowledge, and practices concerning delirium: A survey among intensive care unit professionals. *Nursing in Critical Care, 22*(3), 133-140. doi:10.111/nicc.12239

Purpose/Sample	**Design** **(Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: Study is aimed at identifying barriers for implementation of delirium assessment that should be addressed in a tailored intervention targeted at improved ICU delirium gui deline adherence. **Sample/Setting:** An online survey was conducted among 360 ICU health care profes sionals (nurses, physicians and delirium consultants) from six ICUs in the southwest of the Netherlands **Johns Hopkins Evidence Appraisal** Level of Evidence: III Quality: High	Survey designs	Nonpharmacologic interventions such as early mobilization was used in most ICUs (83%) for prevention of delirium. Most respondents (97%) reported using pharmacologic agents to treat hyperactive delirium**.** Ninety percent of the respondents answered that they were aware of the 2013 PAD guidelines, and 75% of respondents felt that their delirium practices have been changed because of the new guidelines. In addition, logistic regression analysis of this study showed that respondents who use delirium screening tools were twice as likely to be fully aware of key components of the updated guidelines (odds ratio [OR] = 2.07, 95% confidence interval [CI] = 1.20-3.60 **Conclusion:** Knowledge and practice vary among practitioners, but correlation was seen between nursing implementation and years of experience with better scores. Any type of education would lead to significantly improved scores. Education is vital to improve the knowledge and practice of critical care nurses re garding delirium.	**Strengths:** The survey based identification of barriers used in this research is a strength. Surveys help to identify potential barriers to target implementation projects that will result in effective practice changes. **Limitations:** The potential of selection bias is considered due to the 64% response rate. Socially desirable answers could be given in the section of current practices, and the execution of preventive measures.

Author Recommendations:
Identification of implementation **barriers** for adherence to guidelines pertaining to **delirium** is feasible with a follow up survey.

Implications:
There is still a disconnect between the clinical importance of delirium in critically ill patients, and the level of implementation of delirium prevention, screening, and management in daily practice. There is a lack of trust in delirium diagnosis with routine delirium screenings, by validated tools such as the CAM-ICU which could be explained by a lack of knowledge of the clinical implications of delirium and the high reliability of the assessment tool. Collaboration for delirium assessment can improve by delirium discussion during bedside rounds.

Source:
Vasilevskis, E. E., Morandi, A., Boehm, L., Pandharipande, P, P., Girard, T, D., Jackson, J, C., & Wesley, Ely, E. (2011). Delirium & sedation recognition using validated instruments: Reliability of bedside intensive care unit nursing assessments from 2007 to 2010. *Journal of The American Geriatrics Society, 59* S249-S255, doi: 10.1111/j.1532-5415.2011. 03673.x

Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: To describe the reliability and sustainability of delirium and sedation measurements of bedside intensive care unit **(**ICU) nurses **Sample/Setting:** A tertiary **care** academic medical center. Participants 510 ICU patients from 2007 to 2010; 627 bedside nurses. **Johns Hopkins Evidence Appraisal** Level of Evidence: III Quality: High	A cohort study design. Bedside nurses and well-trained reference-rater research nurses independently measured delirium and sedation levels in routine care**.** Bedside nurses were instructed to use the CAM- ICU every 12 hours to measure delirium and the Richmond Agitation-Sedation Scale (RASS) every 4 hours to measure sedation. CAM- ICU and RASS assessment agreement were computed using weighted kappa statistics across the entire population and subgroups (e.g., ICU type). Sensitivity and specificity of bedside nurse identification of delirium were calculated to understand sources of discordance	6,198 CAM- ICU and 6,880 RASS measurement pairs obtained on 3,846 patient-days. For CAM- ICU measurements, agreement between bedside and research nurses was substantial (weighted kappa = 0.67, 95% confidence interval (CI) = 0.66-0.70) and stable over 3 **years** of data collection. RASS measures also demonstrated substantial agreement (weighted kappa = 0.66, 95% CI = 0.64-0.68), which was stable across all **years** of data collection. The sensitivity of **delirium** nurse assessments was 0.81 (95% CI = 0.78-0.83), and the specificity was 0.81 (95% CI = 0.78-0.85). **Conclusion: Bedside** nurse measurements of **delirium** and sedation are reliable sources of information if policies and guidelines are established, with ongoing periodic education.	**Strengths:** The quality and consistency of the independent rater measurement for delirium allows for reliable comparison overtime. This is one strength of the research. The large sample size and examination of important sub-groups that may affect delirium and sedation measurements demonstrates patient s' generalizability. **Limitations:** The study was conducted at a large teaching hospital; therefore, the findings may not be generalized to all settings. Secondly, the nurses' interventions were measured in the ICU and cannot be generalized to the floor setting.

Author Recommendations:
Future studies need to examine ongoing education and audit strategies to maximize reliability and understand how best we can utilize this source of information to guide clinical decision making, and improve patients' outcome.

Implications With commitment to the use of validated sedation and delirium assessment tools, and with the reliability and sustainability of these interventions, assessment can be completed during the clinical course of patients' care. With increased confidence in the use of these tools, barriers to delirium assessment and monitoring could be broken worldwide.