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Implementing a Multicomponent Intervention to Improve Nursing Knowledge of Delirium and Interprofessional Communication of Delirium in Intensive Care Patients

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The document mentioned above has been reviewed and accepted by the student's advisor, on behalf of the advisory committee, and by the Assistant Dean for MSN and DNP Studies, on behalf of the program; we verify that this is the final, approved version of the student's DNP Project including all changes required by the advisory committee. The undersigned agree to abide by the statements above.

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Implementing a Multicomponent Intervention to Improve Nursing Knowledge of Delirium and Interprofessional Communication of Delirium in Intensive Care Patients

Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Nursing Practice at the University of Kentucky

By

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Abstract

PURPOSE: The purpose of this project is to evaluate the implementation of a standardized delirium education program, delirium assessment protocol, and a standardized CAM-ICU reporting method. The goal of the project is to improve nursing delirium knowledge, CAM-ICU documentation compliance, and interdisciplinary discussion of patient's delirium status during Multidisciplinary Rounds (MDR). This project has four distinct objectives. 1) Implement a standardized delirium assessment and communication protocol within the Lexington VAHCS ICU. 2) Increase the nursing knowledge and self-confidence of assessing ICU delirium, by 50% using a multifaceted educational approach. 3) Achieve a 90% documentation compliance rate for the CAM-ICU delirium screening tool. 4) Increase healthcare provider discussion of CAM-ICU assessment by 50%, through the utilization of the "FASTHUGSBID" and "Brain Road Map" for Interdisciplinary Communication during MDR.

METHODS: This is an evidence-based quality improvement project with a pre- and post-implementation design to determine the impact of delirium education and policy implementation on nursing perception and knowledge. The study also includes a pre and post electronic chart review to evaluate for delirium screening and documentation compliance post project implementation.

RESULTS: Nursing knowledge of delirium and understanding of how to properly screen for delirium using the CAM-ICU increased compared to the pre-education knowledge assessment. The data revealed the nurses showed knowledge improvement in 6 of 11 knowledge assessment questions ($p < .011$). The post implementation data collected for the CAM-ICU documentation revealed that compliance rose 9.09% to 91.57% ($p < .001$), and the rate of unable to assess (UTA), CAM-ICU patient assessments, decreased by over 50% to 6.5% ($p < .000$) compared to

the baseline/pre-audit. After the education sessions and implementation of the delirium assessment protocol, the nurses reported CAM-ICU during multi-disciplinary rounds at a rate of 61% (43/70) compared to the pre-implementation rate of 4% (3/69) ($p < .001$). The post-implementation data also showed the attending physicians' leading MDR rounds gave the nurses the opportunity to report on their patients using the FASTHUGSBID rounding tool 93% (65/70) ($p < .10$), compared to 84% prior to implementation. The use of Brain Road Map was introduced as a part of the new delirium assessment protocol; therefore, pre-implementation baseline data did not exist. The post implementation data showed that 67% (6/9) of the patients who were reported CAM-ICU positive were discussed during multi-disciplinary rounds using the Brain Road Map.

CONCLUSION: The findings from this QA/QI project support the implementation of a standardized delirium communication protocol using a multifaceted delirium education approach. As a result of this project's implementation, nursing knowledge of delirium, CAM-ICU documentation compliance, as well as the interprofessional communication of patient's delirium status have all improved.

Acknowledgments

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Dedication

I would like to dedicate this manuscript to my wife Rachael for all of her love and support over the past 10 years of my education journey. My family has pushed me and cheered me on and mostly been patient with me throughout this journey and for that I am eternally grateful. I would also like to dedicate my DNP project to my Mother Sandra Williams, who battled with delirium on and off for 4 months during two different inpatient admissions to the Intensive Care Unit. Without your support and endless encouragement through this process I would never have made it. I look forward to all of the homework-free weekends with my family in our future.

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Background and Significance

Delirium is an acute and severe change in brain function that results in a state of confusion, causing people to have difficulties maintaining focus, thinking clearly, remembering recent events and following commands (Francis & Young, 2018). Commonly associated with adverse outcomes, delirium is an independent predictor of increased mortality rates, longer lengths of stay, greater healthcare costs, and nursing home admissions (Morandi, Pandharipande, Jackson, Bellelli, & Ely, 2012; Solberg, Plummer, May, & Mion, 2013). Delirium is a common occurrence in the intensive care unit (ICU) affecting up to 82% of critically ill patients (Rowley-Conwy, 2018). Although there are several validated delirium screening tools currently being used in practice, ICU delirium goes undiagnosed on a daily basis at a rate up to 72% (Collins, Blanchard, Tookman, & Sampson, 2010). The use of a validated delirium screening tool should be coupled with a standardized approach to delirium education, assessment, documentation, and the communication of delirium treatment; as recommended by current practice guidelines (Barr et al., 2013).

Context of the Problem

Delirium is a key quality metric identified by the Veterans Affairs Health Care System (VAHCS) in central Kentucky. According to clinical practice guideline recommendations, adult ICU patients should be assessed for delirium at least once per shift, as well as the use of rounding checklists to facilitate the use of evidence-base delirium management guidelines or protocols (Barr et al., 2013). The intensive care unit (ICU), within the Lexington VAHCS has recognized the need to standardize their approach to education, assessment, documentation, and the communication of delirium treatment in accordance with current guidelines. The ICU

has deficits in nursing knowledge of delirium, documentation compliance of delirium assessment in the electronic medical record, and a variability in assessment, documentation, and the communication of delirium treatment among their healthcare providers.

Scope and Consequences of the Problem

Delirium is responsible for multiple problems in the critical care setting. These problems frequently result in adverse outcomes, such as self-extubation and the removal of other treatment devices, as well as hospital-acquired complications such as falls and pressure sores (Morandi et al., 2012). The incidence of ICU delirium has been reported to affect up to 82% of critically ill patients (Rowley-Conwy, 2018) making the identification of delirium ever more important. Frequent delirium assessment and communication of the treatment plan is vital to the successful treatment and prevention of delirium (Barr et al., 2013). In the United States, ICU delirium-related healthcare costs are estimated to range from 6.6 to 20.4 billion USD and 38 to 152 billion USD per year in non-ICU patients aged 70 years and older (range: 16,303 to 64,421 USD per case)(Schubert et al., 2018). Currently the ICU at the Lexington VAHCS is using the Confusion Assessment Method (CAM)-ICU screening tool for the assessment of delirium but they do not have a standardized unit policy which guides how often the assessment should be completed, or how the results of the assessments will be discussed amongst the interdisciplinary care team.

Although the CAM-ICU screening tool has been validated and shown to have an 80% sensitivity and 95.9% specificity (Gusmao-Flores, Salluh, Chalhub, & Quarantini, 2012), ICU delirium goes undiagnosed on a daily basis at a rate up to 72% within the U.S. (Collins et al., 2010). As a result of the ICU at the Lexington VAHCS not having a standardized delirium assessment policy, there is not an expectation to hold healthcare providers accountable for

actions or inactions. This results in the variability in delirium assessment, documentation and the communication of delirium treatment for Veterans with delirium (Aparanji et al., 2018).

Evidence-based Intervention

The proposed intervention of this project is to implement a unit protocol which standardizes delirium assessment and interdisciplinary discussion of the Veterans' current mental status (Barr et al., 2013). Nursing staff will be educated on the new delirium protocol, basic knowledge of ICU delirium, and how to utilize the "Brain Road Map for Interdisciplinary Communication" (BRM), by using a standardized power-point presentation and video guided demonstration (Aparanji et al., 2018; Dilibero et al., 2016). The intensive care providers will be briefed on the new delirium protocol. The provider education will emphasize nursing's new expectation to report the CAM-ICU status on all ICU patients using the units FASTHUGSBID rounding tool, as well as the utilization of the BRM during MDR on all Veterans who are CAM-ICU positive.

The BRM was developed in 2002 by Wesley Ely, MD, MPH and Vanderbilt University for interdisciplinary rounds to aid in the determination of the etiology of pain, agitation, and delirium management (icudelirium.org, 2019). The BRM used for this project (Appendix E) was combined with the DELIRIOUS mnemonic (Appendix D), also developed by Wesley Ely, MD, MPH and Vanderbilt University, to add a visual reminder for the healthcare provider leading the discussion of the potential causes of delirium. The BRM was included as an intervention in this project based on the current clinical practice guidelines, which recommend the use of a standardized discussion method during MDR rounds to facilitate the management of delirium (Barr et al., 2013).

Purpose of the Project

The purpose of this project is to evaluate the implementation of a standardized delirium education program, delirium assessment protocol, and a standardized CAM-ICU reporting method. The goal is to improve nursing delirium knowledge, CAM-ICU documentation compliance, and interdisciplinary discussion of patient's delirium status during MDR. This project has four distinct objectives.

Study Objectives

1) Implement a standardize delirium assessment and communication protocol, within the Lexington VAHCS Intensive Care Unit. 2) Increase the nursing knowledge and self-confidence of assessing ICU delirium, by using a multifaceted educational approach. 3) Achieve a 90% documentation compliance rate for the CAM-ICU delirium screening tool.

4) Increase healthcare provider discussion of CAM-ICU assessment by 50%, though the utilization of the "FASTHUGSBID" rounding report and "Brain Road Map" for Interdisciplinary Communication" during multi-disciplinary rounds.

Theoretical framework/process improvement model

The Iowa Model of Evidence-Based Practice to Promote Quality Care was used as the conceptual framework because it provided an excellent decision making guide during the development and implementation process of the project (Melnyk & Fineout-Overholt, 2015). Each of the eight components within the model are necessary steps that must be taken in order for the practice inquiry project to be successful. The eight primary components of the model are: identify "triggers", organizational priorities, form a team, evaluation of the evidence, piloting a practice change, evaluating the practice change, institute the practice changes, and dissemination

of results (Melnyk & Fineout-Overholt, 2015). An example of this model is presented in Appendix H.

When applied directly to this quality improvement project, the Iowa Model, reveals there were two driving "triggers" which were identified from the onset. The problem focused or clinical problem, in this case, was the lack of a delirium assessment and communication protocol. The knowledge focused trigger was identified among the nursing staff, as a knowledge deficit of delirium and how to properly screen for delirium using the CAM-ICU tool. Next, the project team or committee was formed to discuss how these problems align with the VAHCS's organizational priorities, and to decide whether there was sufficient evidence to proceed with the project as planned. Delirium is identified as one of the key quality metrics by the VAHCS, and the committee agreed there was ample literature to support the project's design.

The practice change was piloted by distributing a pre-knowledge assessment survey, the collection of pre-implementation data, and the education implementation component of the project. The next step in the project, following the Iowa Model, was the evaluation of the practice change. This was done by collecting data from the post-knowledge assessment survey, as well as chart and MDR audits. The protocol was adopted by the Lexington, VAHCS Intensive Care Unit and reflected in their unit's standards of care. The final step was to disseminate the results, which was done by presenting the project results to the nursing staff at the 5 March, 2020 staff meeting.

Review of Literature

Background

Delirium is an acute and severe change in brain function that results in a state of confusion, causing people to have difficulties maintaining focus, thinking clearly, remembering

recent events and following commands (Francis & Young, 2018). Commonly associated with adverse outcomes, delirium is associated with many hospital-acquired complications (Morandi et al., 2012), as well as increased mortality rates, longer lengths of stay, greater healthcare costs, and nursing home admissions (Solberg et al., 2013). Delirium is a common occurrence in the intensive care unit (ICU) affecting up to 82% of critically ill patients (Rowley-Conwy, 2018). Although there are several validated delirium screening tools currently being used in practice, ICU delirium goes undiagnosed on a daily basis at a rate up to 72% (Collins et al., 2010). The aim of this literature review is to support that the implementation of a delirium education plan, in conjunction with a standardized interdisciplinary delirium communication tool, is a strategy supported by the evidence to improve nursing delirium assessment rates.

Search Methods

A review of the literature was accomplished using MEDLINE, PubMed and CINAHL. Keywords and phrases used in the search included: delirium; intensive care unit (ICU) and/or critical care unit; delirium protocol; delirium communication tools; delirium assessment compliance; delirium education program. The search was restricted to peer-reviewed, original research studies with available full text published between 2013 to February 2019. The inclusion criteria for selecting studies was that the study focus was on nursing delirium assessment and compliance outcomes in adult ICUs. 'ICU' was broadly defined to include any of the following: MICU, SICU, TICU, STICU, and CVICU. Exclusion criteria was used to further narrow the remaining studies to those who only used some form of delirium education as a primary intervention in an original study or a systematic review.

Findings

A total of 722 studies were found, 87 met inclusion criteria and 77 were excluded. A total of 10 publications met the inclusion and exclusion criteria and were included in the integrative review**.** All studies were evaluated using the Johns Hopkins Nursing Evidence-Based Practice Appendix C: Evidence Level and Quality Guide (Dang & Dearholt, 2017). The studies selected for this review included one randomized control trial that is considered level 1 evidence (McCrow, Sullivan, & Beattie, 2013); one retrospective chart review with a pre-posttest (Babine et al., 2018), and five pre-posttest designs which are classified as level 2 evidence (Aparanji et al., 2018; Chambers, Meyer, & Peterson, 2018; Detroyer et al., 2018; Dilibero et al., 2016; Wand et al., 2013); and three quasi-experimental pre-posttest design considered a level 3 design (Hickin, White, & Knopp-Sihota, 2017; Ramaswamy et al., 2011; Ramoo et al., 2018).

The literature shows an overall support for the use of an educational intervention for improving delirium detection and assessment compliance (Aparanji et al., 2018; Babine et al., 2018; Hickin et al., 2017). Of all the studies reviewed, only one reported the nursing staff failed to increase their delirium knowledge after the educational intervention was complete (Detroyer et al., 2018); this was one of two studies which used an "e-learning" or "web-based" platform as their educational intervention (McCrow et al., 2013). An overarching theme which stood out from this body of literature is that a multifaceted educational approach is recommended when designing a delirium education program (Babine et al., 2018; Dilibero et al., 2016; Ramoo et al., 2018). Examples of a multifaceted educational approach included: small group didactic lectures; simulation of delirium assessment; as well as reinforcing techniques using nurse champions and delirium discussion during rounds (Ramaswamy et al., 2011; Ramoo et al., 2018).

While the literature support for implementing a standardized method for communication of delirium status during MDR is not strong, there are a few studies which report this intervention improved delirium screening compliance for ICU patients (Aparanji et al., 2018; Dilibero et al., 2016). Ramaswamy et al. (2011), found that delirium discussion during interdisciplinary rounding as an especially successful method of delirium education for nurses and resident teams. Current clinical practice guidelines also recommend the use of an interdisciplinary approach for delirium education, as well as using a standardized delirium discussion method during patient rounds to facilitate the management of delirium; which is supported by a moderate level of evidence (Barr et al., 2013).

Two of the more recent studies published within the literature, Aparanji et al. (2018) and Dilibero et al. (2016) used an interprofessional educational approach when designing their delirium education interventions. They also utilized a standardized method to communicate patient's delirium status during daily rounds. Both studies reported an overall increase in their staff's delirium knowledge as well as an increase in documentation compliance of delirium assessments. Two additional studies who used an interprofessional education approaches and reported improved delirium knowledge levels and confidence levels in proper utilization of their respective delirium assessment tools (Babine et al., 2018; Ramoo et al., 2018).

Discussion of Literature Review

Limitations

There are several limitations associated with this literature review. The first being the lack of controlled trials and qualitative studies on interprofessional delirium education programs, as well as blinding was not possible given the multiple variables within the multifaceted education programs (Ramoo et al., 2018). While the multifaceted education programs have

proven successful, the inability to control for different variables limits the understanding of the effectiveness that each individual education component have on the outcomes (Hickin et al., 2017; McCrow et al., 2013). Another limitation is that all of the studies, minus the two systematic reviews, were conducted at a single-center which may affect the generalizable of the findings to other institutions (Aparanji et al., 2018; Dilibero et al., 2016). Though not listed as a limitation within this literature review, a third limitation of this body of literature is the lack of studies which included the standardization of delirium discussion during patient rounds.

Implications for Practice

As a whole, this body of literature is very important to nursing practice and especially those who provide care for patients who either have delirium, or are at increased risk of developing delirium. The educational and reinforcement strategies highlighted throughout this review are important to practice because they emphasize that when healthcare provider's fundamental knowledge level of delirium increases so does their assessment accuracy and compliance (Dilibero et al., 2016; McCrow et al., 2013; Ramoo et al., 2018). Additionally, Ramoo et al. (2018), recommends intergrading delirium educational into ICU orientation because they identified that new nurse and those nurses new to the ICU were not very knowledgeable about delirium in general. All of these implications have the potential to increase the number of patients accurately diagnosed with delirium, which leads to earlier management and mitigation of the adverse effects which typically accompany delirium (Hickin et al., 2017; Ramaswamy et al., 2011).

Conclusion

The intent of this literature review was to show that the implementation of a delirium education plan, combined with a standardized interdisciplinary delirium communication method,

is an evidence-based strategy that improves delirium knowledge and assessment compliance. This body of literature supports the use of delirium education programs in combination with a standardized interdisciplinary delirium communication process to improve delirium knowledge and nursing assessment compliance.

The intent is to implement a delirium quality improvement project using the evidence from this literature review to develop an interprofessional, multifaceted delirium education program that will improve healthcare providers communication of their patient's delirium status. This project also has the potential to increase the number of patients diagnosed with delirium resulting in earlier mitigation of the adverse effects, which are commonly experienced with a diagnosis of delirium. Additionally, this project may serve as the foundation for a future quality improvement project to implement delirium prevention and care bundles.

Project Agency Description

Site Description

The institution at which I will be implementing my DNP project is the Veterans Affairs Health Care System (VAHCS), Cooper Division, located in Lexington, Kentucky. This is a 199-bed inpatient general medicine and surgery facility that offers: emergency care, polytrauma, inpatient medical-surgical care, acute psychiatry, intensive and progressive care units, (includes Cardiac Cath Lab) ambulatory surgery, medicine and surgery specialty clinics, and hemodialysis (lexington.va.gov, 2019). The Veteran population in Lexington's primary service area is estimated at more than 83,000 (lexington.va.gov, 2019). This pilot study will be conducted with in the hospital's 13 bed medical-surgical intensive care unit, which is staffed by various medical professionals: APRN, DO, MD and RNs.

Project Sample and Recruitment

Inclusion criteria are all intensive care nurses at the Lexington VAHCS. The target patient population is adult intensive care patients, ages 18-80 years, of both genders. Exclusion criteria include nurses who are currently on orientation or know they will be leaving their current position by January 2020. Patient exclusion criteria will include patients' age < 18 or >80 years, and those receiving a paralytic infusion.

Recruitment for this project will be a two-step process. For the recruitment of the nurses a brief introduction of the project including the inclusion and exclusion criteria will be presented to the nursing staff at staff meetings and/or daily nursing safety huddles until information is disseminated to all nurses. For the Veterans' recruitment, the electronic medical record database will be accessed through the Lexington VAHCS. Medical records of Veterans who meet inclusion and exclusion criteria between the dates of will be evaluated for CAM-ICU documentation compliance.

Congruence with Organization Mission

There are a few congruencies that my project shares with the VA's Office of Nursing Services (ONS) strategic nursing plan for 2014-2020. The first being nursing strategy 2a: create efficient processes and use technology and devices to ensure safe patient care; and 2a (1) provide non-medication protocol guidance (Healthcare, 2014). This coincides with my first project aim which is to standardize the delirium assessment and delirium communication practices of healthcare providers through the implementation of a delirium protocol. Another strategy which is congruent with my project is 2a (4): implement process changes using data from high risk populations; all patient in the intensive care unit are considered high risk for delirium (Healthcare, 2014). Nursing Strategy 5b states: develop and standardize processes and resources

that promote workforce development, professionalism and continuous learning (Healthcare, 2014). This is congruent with the third aim of the project which is to promote healthcare provider discussion of delirium assessment though the utilization of the BRM during multi-disciplinary rounds. Finally, nursing strategy 5b (7) is to revise and disseminate Evidence Based Practice curriculum (Healthcare, 2014). This particular strategy corresponds with the second and fourth aims of my project which are to increase the nurses' utilization compliance with the CAM-ICU delirium assessment tool though the implementation of a delirium education program.

Description of Stakeholders

Stakeholders within the organization are the Hospital Office of Quality, Safety and Value, Intensive Care Medical Director, Intensive Care Clinical Nurse Specialist, Critical Care Nurse Manager, intensive care physicians and advanced practice providers, nursing staff, and the patient/families. The Hospital Office of Quality, Safety and Value will have a vested interest in the project because one of their functional areas is evidenced-based clinical practice programs (va.gov, 2018). The Intensive Care Medical Director is serving as one of my clinical mentors for the project. As the department chief, he will have the final approval and signature on the new delirium protocol. His support played a vital role in gaining the support of the other critical care providers.

The Intensive Care Clinical Nurse Specialist served as the clinical mentor for the project and played a pivotal role in helping navigate the VA system. The Critical Care Nurse Manager was as a key facilitator to the scheduling and support of the staff education component of the project. The intensive care physicians and advanced practice providers were active participant in the project. Their support of the new delirium protocol was critical as they are the leaders and facilitators of multi-disciplinary rounds. The intensive care nurses were also active

participants/subjects in the quality improvement project. The Staff Lead nurses assisted with the pre-post survey collection from the staff nurses, as well as covering patient assignments during the educational sessions. The family/patient's role was to receive or participate in the service being provided.

Site-Specific Facilitators and Barriers

The most obvious barrier to the implementation of the delirium protocol is the staff resistance to changing their patient presenting habits during MDR. This barrier is two-fold in the fact the attending physicians who lead MDR must permit the nurses the opportunity to present their delirium assessments per the protocol, and the nurses must be prepared and actually present the information and follow the protocol. Another barrier was learning how to navigate an unfamiliar electronic medical record in order to obtain the retrospective CAM-ICU documentation data needed for evaluation. The next barrier to implementation was the lack of familiarity with the nursing staff, providers, and the current culture of the unit.

There were a few facilitators to implementing this project at the VAHCS. The first being the fact that the Principal Investigator (PI) is an Active Duty service member and has cared for the Veteran population before throughout his nursing career. Another important facilitator was the quality improvement design of the project, and the projects aims align with the facility mission and strategic nursing plan. An additional facilitator was the Intensive Care Department Chief, as well as the Clinical Nurse Specialist, were clinical mentors on the project committee. The final facilitator is the PI completed 160 hours of clinical time during the same time frame as the project implementation. This allowed him to build a rapport with the nursing and provider staff which facilitated "buy in" and a sense of trust for the project and its implementation.

Project Design and Methods

Description of Intervention

This is an evidence-based quality improvement project with a pre- and post-test analysis to determine the impact of delirium education and policy implementation on nursing perception and knowledge of delirium. The project involved multiple components. The first component of the project involved a retrospective review of the electronic health record of patients admitted to the Lexington VAHCS ICU, between May 2019 to June 2019. This was done to determine the documentation compliance rate for the CAM-ICU delirium assessment tool prior to education and protocol implementation. The PI's target number of chart audit was 250 during the pre-implementation phase, and 250 audits during post-implementation phase. A total of 331 audits met inclusion/exclusion criteria during the pre-implementation audit. Following the education and protocol implementation portion of the project, a post implementation chart audit was performed to evaluate for improvement in the CAM-ICU documentation compliance rate. The PI reviewed 369 records that met both inclusion/exclusion criteria during the post implementation audit. De-identified data from the pre and post chart reviews was converted into an Excel spreadsheet, for statistical analysis by the PI.

Another component of this study involved a pre-post survey (Appendices A, B). A recruitment/introductory email was sent out to all the ICU nurses, which included a hyperlink to the pre- survey/assessment. The survey was designed to assess the nurses perceived self-confidence and current knowledge of delirium, as well as delirium assessment. Next, the nursing staff was educated on the new delirium protocol, basic knowledge of ICU delirium, and how to utilize the BRM by using a power-point presentation and hands-on demonstration. The intensive care providers were briefed on the new delirium protocol including nursing's new expectation to

utilize the BRM during daily interdisciplinary rounds. Immediately after the delirium education took place, a post test/survey was emailed to all participants to reassess the nurse's self-confidence and delirium assessment knowledge following the implementation of the delirium protocol and education sessions. All of the survey/assessments were completed using Qualtrics survey software which allowed the surveys to be completed anonymously to protect the participants privacy.

The final component of the project included a redesign to the facility approved FASTHUGSBID rounding tool (Appendix P) and the implementation of the BRM during daily interdisciplinary rounds. During the pre-implementation phase of the project the PI observed MDR for 10 days to evaluate the rate nurses were reporting patient's CAM-ICU status using the facility approved FASTHUGSBID rounding tool. The attending physician's leading MDR rounds were also evaluated on the percentage rate they allowed the staff nurses the opportunity to report on all ICU patients using the FASTHUGSBID during MDR. As part of the new implementation, the FASTHUGSBID rounding tool was reconfigured to create a more visual reminder for the nurses to report the CAM-ICU assessment. This was done by giving the CAM-ICU its own separate line under Agitation (Appendix Q).

Following the education sessions and protocol implementation, the PI observed MDR for 10 days to reevaluate the rate nurses were reporting the Veterans' CAM-ICU status using the newly approved FASTHUGSBID rounding tool. The rate at which the nurses were allowed to present on ICU patients using the FASTHUGSBIG rounding was also reevaluated. Lastly, the rate adherence of the newly implemented BRM was evaluated for use on Veterans who were reported CAM-ICU positive per the delirium protocol. To conclude the project, the PI presented all of the pre-post project result and data to the nursing staff at the March 5, 2020 staff meeting.

Procedures

IRB Determination

Approval for the project was obtained from both the VAHCS Office of Research Integrity and the University of Kentucky Office of Research Integrity. The project proposal and the VA Research Determination Aid for Human Subjects Research, was submitted to the VAHCS Office of Research Integrity. The project was determined to be a quality improvement/ quality assurance (QA/QI) project; therefore, it was not required to meet an IRB (Appendix M). The project was also submitted to the UKHC IRB via their e-IRB online submission program. After reviewing the package, a representative from the UKHC Office of Research Integrity recommended the PI to complete a Not Human Research (NHR) Determination Form to determine whether or not the project was required to meet an IRB. The PI was notified that a UKHC IRB Chair or designee reviewed the NHR form and determined the proposed protocol/ project met the criteria for quality assurance/improvement (QA/QI) and did not need IRB review and approval (Appendix O).

Sample

Data were sampled from all of the intensive care health care providers who met the inclusion/exclusion criteria. Inclusion criteria included all intensive care nurses at the Lexington, VAHCS. The target patient population for the retrospective chart review was adult intensive care patients, ages 18-80 years, of both genders. Exclusion criteria included nurses who were currently on orientation or knew they would be leaving their current position by January 2020. Patient exclusion criteria included patients' age < 18 or >80 years, as well as those receiving a paralytic infusion.

Data Analysis and Measures

Data analysis will be performed using SPSS version 25 (SPSS, Inc., Chicago, IL). A p-value of $< .05$ will be considered statistically significant for the analysis. Descriptive analysis, including means and standard deviation will be used to summarize study variables of interest. A paired t-test will be used to examine changes in the pre-post knowledge and perception scores, a chi-square test will be used to analyze the pre-post chart audit data, and descriptive statistics and chi-squared test will be used to describe the pre-post MDR communication data. The Likert opinion scale of, strongly disagree (1) to strongly agree (5) will be used for all of the questions on the pre-post knowledge and perception assessment.

Study measures are displayed in detail in Table 1. Instruments utilized to complete project will include: Staff Demographic survey (Appendix A); Delirium knowledge assessment (Appendix B); Delirium Assessment Policy (Appendix C); Brain Road Map (BRM) for Rounds (E); and Delirium Education Materials (Appendix F, G). The interrater reliability of the questionnaire developed by Devlin et al. (2008), related to knowledge of delirium and delirium assessment, was reported as 86% (Ramoo et al., 2018).

Implementation

For the recruitment of the nurses, a brief introduction of the project including the inclusion and exclusion criteria was presented to the nursing staff via email and at staff meetings. A recruitment/introductory email was sent out to all the ICU nurses, which included a hyperlink to the pre- survey/assessment. Coordination with the intensive care nurse manager was conducted to set up live educational sessions lasting no more than 20 minutes. The content covered in the educational sessions included: delirium education, protocol education, and an example of how to use the brain road map during rounds and proper use of the CAM-ICU

delirium screening tool. An overview of the education power point presentation can be viewed in Appendix I. After each education session, the post-surveys and assessment were emailed to each of the participants in the form of an online survey for completion. During the education phase of the project, the PI participated in daily MDR reminding the providers and staff nurses of the new CAM-ICU assessment reporting requirement. The PI also demonstrated how to properly report on CAM-ICU positive patients using the BRM during this phase of the project.

Timeline, Resources, and Feasibility

Timeline

The timeline for this project started with the ICU intensive care clinical nurse specialist and ICU medical director in January 2019. By September 25, 2019 the retrospective portion of the CAM-ICU documentation data collection was completed. The pre- protocol implementation MDR reporting audit was complete on October 9, 2020. The educational component of the project started on October 10 and the final educational session was conducted on November 5, 2020. The post implementation data collection was conducted from November 6 through December 17, 2020. Data analysis and recording occurred during the months of January and February 2020. The project findings were shared with the clinical nurse specialist, nurse manager and nursing staff on February 27, 2020.

Feasibility and Sustainability

The feasibility of completing this project according to the timeline outlined above was high. The timeline allowed adequate time to obtain the necessary approvals, which must be received before the project can begin, as well as allowing some flexibility throughout the plan. The sustainability plan for the project was to incorporate the delirium education training into the nursing unit orientation and annual nursing training. All of the educational material, including

the power point presentation and cases studies were given to the ICU Clinical Nurse Specialist to incorporate the training plan as she desired.

Results

Nursing Knowledge and Perception of Delirium

Sample Characteristics

A total of 31 participants completed the pre- and post-knowledge and perception assessment. During the time frame the project was conducted, September 2019 to December 2019, there were approximately 31- 33 nurses working full time in the ICU. There were 31 participants who completed the pre-assessment and received the educational component of the intervention, and 21 of those 31 participants completed the post-assessment. Thirty-one percent of nurses had an Associate degree, 59% percent a Bachelor's degree, while 9.4% had a Master's degree in nursing. The sample surveyed was an experienced group of nurses with 50% having 6-10 years of ICU nursing experience, 3% with 11-20 years of ICU experience, and 9% having >21 years of ICU nursing experience (Table 2).

Knowledge and Perception Assessments

The pre-and post-knowledge assessment surveys contained 11 questions which tested general knowledge related to hospital acquired delirium and 1 question related to the nurse's perception of assessing delirium. The exact same questions were used from the pre- and post-knowledge assessments. All of the questions used a Likert opinion scale of strongly disagree (1) to strongly agree (5). Questions 12-15, 20, 22, and 24 were all true statements or a 4-5 on the Likert scale. Questions 16, 17, 19, and 23 were all false statements or a 1-2 on the Likert scale. Question 18 was the only perception question used on the survey (Appendix B).

Knowledge improvement can be identified in true questions, by looking to see if the number increased from the pre to post assessment. For example, in question number 20 "Delirium can be classified into 3 different categories?", knowledge improvement was demonstrated in the post assessment compared to the pre because the average answer increased from a 3.6 to 4.8 ($p < .001$). On the other hand, knowledge improvement can be identified in FALSE questions, by looking to see if the number decreased. For example, question number 23 "If a patient is RASS-3 or very lethargic the CAM-ICU assessment would be "unable to assess"?", knowledge improvement was demonstrated in the post assessment because the average answer decreased from a 4.1 to 1.9 ($p < .001$).

The comparison of the pre-education and post-education knowledge assessment data revealed that 6 of the 11 questions (12, 15, 18, 20, 22, 23, 24) were statistically significant for knowledge improvement (Table 3). The participants showed a firm understanding of questions 13, 14, 16, 17, and 19, answering them correctly in the pre-assessment, therefore their answers did not change on the post-assessment. The remaining question, (18) had a mean pre-education score of 3.5 (SD = 1.2) and a mean post-education score of 3.5 (SD = 1.3) (Table 3).

CAM-ICU Documentation Data

The comparison of the pre-implementation and post-implementation chart audit of the CAM-ICU documentation revealed statistically significant data. The post implementation data collected for the CAM-ICU documentation compliance rose 9.09% to 91.57% ($p < .001$) (Table 4). The number of "unable to assess" (UTA) CAM-ICU Veteran assessments decreased by over 50% to 6.5% ($p < .000$) (Figure 1).

Multi-Disciplinary Discussion of CAM-ICU Assessment

Prior to the education sessions and implementation of the delirium assessment protocol, the nurses reported CAM-ICU during multi-disciplinary rounds (MDR) at a rate of 4% (3/69) (Table 5). The post education and protocol implementation data revealed the nurses reported CAM-ICU during MDR 61% (43/70) of the time ($p < .001$) (Table 5). Prior to the protocol implementation, the attending physician's leading MDR rounds gave the nurses the opportunity to report on their patients using the FASTHUGSBID rounding tool 84% of the time. Following the protocol implementation, the attending physicians who led MDR gave the nurses the opportunity to report on their patients using the FASTHUGSBID rounding tool 93% (65/70) of the time ($p < .10$) (Table 5).

The use of BRM was introduced as a part of the new delirium assessment protocol; therefore, pre-implementation data did not exist. During the post implementation evaluation period there were 9 patients who were reported as CAM-ICU positive using the FASTHUGBID rounding tool. Six of the nine, or 67%, of the nurses used the Brain Road Map to discuss potential causes of the patient's delirium and to devise a delirium treatment plan.

Discussion

Nursing Knowledge and Perception of Delirium

The participants demonstrated understanding of 5 of the 11 knowledge assessment questions by answering them correctly in the pre- and post-assessment, which can likely be related to the level of nursing experience of the participants. Ninety-three percent of the participants have been practicing nursing at least six years and 69% have at least a Baccalaureate of Science in Nursing or higher (Table 2). As a result of the standardized educational component of the project, the participants' increased their delirium assessment and general delirium

knowledge on 6 of the 11 knowledge assessment topics. When compared to the pre-assessment, the post-assessment suggests the participants improved their knowledge and understanding of conducting a delirium assessment using the CAM-ICU screening tool. Question number 18 assessed the participants' perception of whether they thought "Delirium is challenging to assess in ICU patients". However, the participant's perception did not change regarding this question following the educational component of the project.

CAM-ICU Documentation Data

The CAM-ICU documentation results from this project adds to the body of literature which suggest CAM-ICU documentation compliance and delirium assessment knowledge can be improved through a standardized educational program (Aparanji et al., 2018; Babine et al., 2018; Hickin et al., 2017). The 50.3% decrease in the number of UTA, assessments documented by the participants during the post documentation audit, demonstrates an increased knowledge of which patients can and cannot be appropriately screened for delirium using the CAM-ICU tool (Table 4). The improvement of the CAM-ICU documentation data can also be linked to the participants' improvement in knowledge and understanding of the CAM-ICU screening criteria. This is evident specifically by the improvement of the participants' responses to questions number 23 and 24 on the knowledge assessment (Table 3). The post-assessment data suggests the participants demonstrated a statistically significant knowledge improvement in their understanding of which patients can and cannot be appropriately screened for delirium, and how to properly use the CAM-ICU screening tool.

Multi-Disciplinary Discussion of CAM-ICU Assessment

The pre- and post-MDR data suggests that the implementation of a standardized delirium assessment and delirium communication protocol improves healthcare providers communication

of patient's delirium status, and promotes discussion of a delirium treatment plan. The pre-implementation FASTHUGSBID rounding tool used by the ICU had CAM-ICU as a sidebar to the "A" or Agitation category and was only reported by the nurses 4% of the time during MDR (Appendix P). The combination of educating the participants on the new delirium protocol, as well as redesigning the FASTHUGSBID rounding tool (Appendix Q), increased the rate patient's CAM-ICU status was reported during MRD from 4% to 61%. The improvement in the rate the attending physicians provided the nurses the opportunity to present the FASTHUGSBID during MDR suggests that the protocol implementation and provider's education of the new protocol was a success; as evidence by the rate increasing from 84% to 93%.

The implementation of the BRM as a method of discussing CAM-ICU positive patients was a completely new concept for the entire multi-disciplinary team. There was no baseline data to compare the post-implementation data to, but the new discussion tool was used 67% of the CAM-ICU positive patients after only being introduced to the staff for two months. This component of the project highlighted the challenges encountered when implementing a new process in a multi-disciplinary setting. It is crucial to gain full support from the stake holders at every level because lack of buy-in from just one authority figure can significantly hinder changing a culture. In this case, if full support from all of attending physicians who lead MDR is not gained, the nurses may not get the opportunity to report the patient's delirium, thus stifling the multi-disciplinary communication of the patient's mental status and plan of care.

Future Implications for Practice, Education, and Research

There are several implications which can be elicited from this QA/QI project. The first is a link between practice and education implicating a knowledge gap in the nurse's understanding of which patients are appropriate to assess using the CAM-ICU screening tool, and those patients

who they are unable to assess. The pre/post data revealed the education program was successful at improving the nurse's knowledge and understanding related to which patients are appropriate to assess using the CAM-ICU screening tool. Furthermore, these findings support the need to incorporation the CAM-ICU delirium education program into the new hire orientation, as well as the annual nursing skills fair. Another future implication for education and practice is the implementation of a similar protocol and educational program on all of the inpatient units' hospital wide. The standardization of a delirium assessment protocol and education program throughout the inpatient setting is supported by the evidence, as the incidence rate of delirium is 25% in all non-ICU hospitalized patients (Association, 2019). The education material from this project, as well as the protocol was given to the Lexington, VAHCS education and training manager upon her request for use throughout the inpatient setting.

Another implication is the need for future research to evaluate whether the implementation of the BRM to discuss CAM-ICU positive patients has affected provider practice or changed any patient outcomes. One variable which should be investigated is whether or not there has been a provider practice change or decrease in the amount or type of sedation and/or analgesia ordered by the healthcare team in CAM-ICU positive patients. Another aim for future research should be to evaluate if the average number of ventilator days experienced by CAM-ICU positive patients differs before and after the implementation of the BRM discussion tool.

Limitations

There are several limitations to this study. The most obvious limitation to acknowledge about this study is that there were no direct patient outcomes measured. The project timeline did not allow time to gather post implementation data. Another limitation of this project was the inability to incorporate the CAM-ICU assessment details into the electronic medical record

(EMR) at the VAHCS. Studies by Ashley et al. (2014) and Brummel et al. (2013), both recommend embedding the complete CAM-ICU assessment details into the EMR to ensure the highest CAM-ICU documentation compliance.

A final limitation to the study was the lack of questions in the assessment survey to adequately gauge the nurse's perception of the barriers to evaluating patients using the CAM-ICU screening tool. The following questions would have aided in assessing the nurses perceived barriers to evaluating for the presence of delirium: (i) it is difficult to assess CAM-ICU in the intubated patient; (ii) it is challenging to complete the CAM-ICU assessment in sedated patient. The information from these questions would have been valuable in the development of the education program to ensure the nursed received the necessary education.

Professional Next Steps

Moving forward with this project, the professional next steps would be to first further disseminate the results and consider sustainability options. The initial results were presented to the ICU staff in a Power point presentation on March 5, 2020. Other potential dissemination methods to consider are to submit the study for the University of Kentucky's research papers day in the Fall of 2020, or present the study as a poster/podium presentation at a professional conference. Sustainability was addressed by passing along all of the education materials and resources to the ICU Clinical Nurse Specialist, and the department of nursing education director so they could incorporate the training into new hire orientation or annual skills training as they saw necessary. The next phase of this project would be to expand and replicate the delirium protocol, as well as the delirium education and training throughout the remaining inpatient units within the Lexington VAHCS.

Summary/Conclusion

Delirium is a dangerous medical condition responsible for a variety of hospital-acquired complications (Morandi et al., 2012), as well as increased mortality rates, longer lengths of stay, greater healthcare costs, and nursing home admissions (Solberg et al., 2013). Early identification and a multi-disciplinary discussion of the possible causes are the first steps in developing a treatment plan to not only resolving delirium, but mitigating the adverse effects, which are commonly experienced with the diagnosis of delirium.

The Iowa Model of Evidence-Based Practice to Promote Quality Care provided an easy to follow, step by step guide for the successful implementation of a standardized delirium education program, as well as a delirium assessment and communication protocol. The Iowa Model helped in the design and planning of the multifaceted education program which ultimately led to the improvement of nursing knowledge of delirium, as well as the improvement in interprofessional communication of patient's delirium status. Furthermore, this project laid the groundwork for future research to evaluate the utility of the BRM to discuss CAM-ICU positive patients, and if its use affects provider practice or changes patient outcomes related to the adverse effects of delirium.

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Tables

Table 1. Table of study measures

Measures	Description	Level of Measurement	Data Source
Demographics of ICU staff			
Level of Nursing Education	a. Associate Degree, Nursing b. Bachelor of Science in Nursing (BSN) c. Master of Science in Nursing (MSN) d. Doctorate in Nursing (DNP/PhD)	Nominal	Survey
Years of Experience as an RN	0-5 years 6-10 years 11-20 years > 21 years	Ordinal	Survey
Years of Experience in ICU	0-5 years 6-10 years 11-20 years > 21 years	Ordinal	Survey
Advanced Nursing Specialty Certification	Example: CCRN, CEN Yes or No	Nominal	Survey
Work shift	7am – 7pm 7pm – 7am 11am – 11pm 11pm – 7am Other	Ordinal	Survey
Patient Information			
CAM-ICU assessment	Confusion-Assessment Method for the ICU (CAM-ICU) assessment completed once per 12-hour shift? Yes or No	Nominal	Medical Records
Unable to Assess (UTA)	CAM-ICU assessment documented as UTA? Yes or No	Nominal	Medical Records
Outcome			
Perceived self-confidence attitudes	Level of perceived self-confidence and attitudes towards ICU delirium. All Likert scales included in the study used an opinion scale of strongly disagree (1) to strongly agree (5).	Nominal	Survey
ICU Delirium Knowledge Survey	Likert scales included in the study used an opinion scale of strongly disagree (1) to strongly agree (5).	Nominal	Survey
CAM-ICU assessment completed	Confusion-Assessment Method for the ICU (CAM-ICU) assessment completed once per 12-hour shift? Yes or No	Nominal	Medical Records
Unable to Assess (UTA)	CAM-ICU assessment documented as UTA? Yes or No	Nominal	Medical Records

Table 2. Demographic Characteristics of ICU Nurses

Demographic characteristic	n (%)
Nursing education	
ADN	10 (31.3%)
BSN	19 (59.4%)
MSN	3 (9.4%)
DNP/PhD	0 (0%)
Years as a nurse	
1-5 years	2 (6.3%)
6-10 years	16 (50%)
11-20 years	10 (31.3%)
>21 years	4 (12.5%)
Years as an ICU Nurse	
1-5 years	12 (37.5%)
6-10 years	16 (50%)
11-20 years	1 (3.13%)
>21 years	3 (9.4%)
Advanced nursing specialty certification (CCRN, CEN)	
Yes	4 (12.5%)
No	28 (87.5%)

Table 3. Delirium Knowledge Assessment Results

	Pre-education (n=32) Mean (SD)	Post-education (n=21) Mean (SD)	*p*
12. Delirium is an underdiagnosed problem.	4.5 (0.6)	4.9 (0.4)	**.011***
13. Delirium is a common response to the ICU environment.	4.6 (0.6)	4.8 (0.4)	.199
14. Delirium is a problem that requires active interventions on the part of caregivers.	4.7 (0.6)	4.8 (0.4)	.467
15. Delirium is associated with higher patient mortality.	4.3 (0.7)	4.9 (0.4)	**<.001****
18. Delirium is challenging to assess in ICU patients.	3.5 (1.2)	3.5 (1.3)	.874
20. Delirium can be classified into 3 different subtypes.	3.6 (0.85)	4.8 (0.7)	**<.001****
22. You can perform a CAM-ICU assessment on a patient with dementia.	3.4 (1.2)	4.3 (0.7)	**.002***
24. When performing a CAM-ICU assessment, it still counts as "fluctuations in mental status" or "change from baseline mental status" when a patient is on sedatives.	3.1 (1.4)	4.6 (0.7)	**<.001****
16. ICU patients with delirium are rarely agitated.	1.7 (1.1)	2.1 (0.96)	.148
17. Initiation of antipsychotic therapy (e.g., Haldol) should be the initial intervention for all patients with delirium.	2.6 (1.04)	2.3 (0.97)	.357
19. Patients with delirium usually have symptoms that are consistent over the entire nursing shift.	2.7 (1.1)	2.2 (1.2)	.149
23. If a patient is RASS -3 or very lethargic the CAM-ICU assessment would be "unable to assess".	4.1 (1.2)	1.9 (1.4)	**<.001****
Legend: * is for P values < .05, and ** is for P values < .001			

Table 4. CAM-ICU Documentation Data

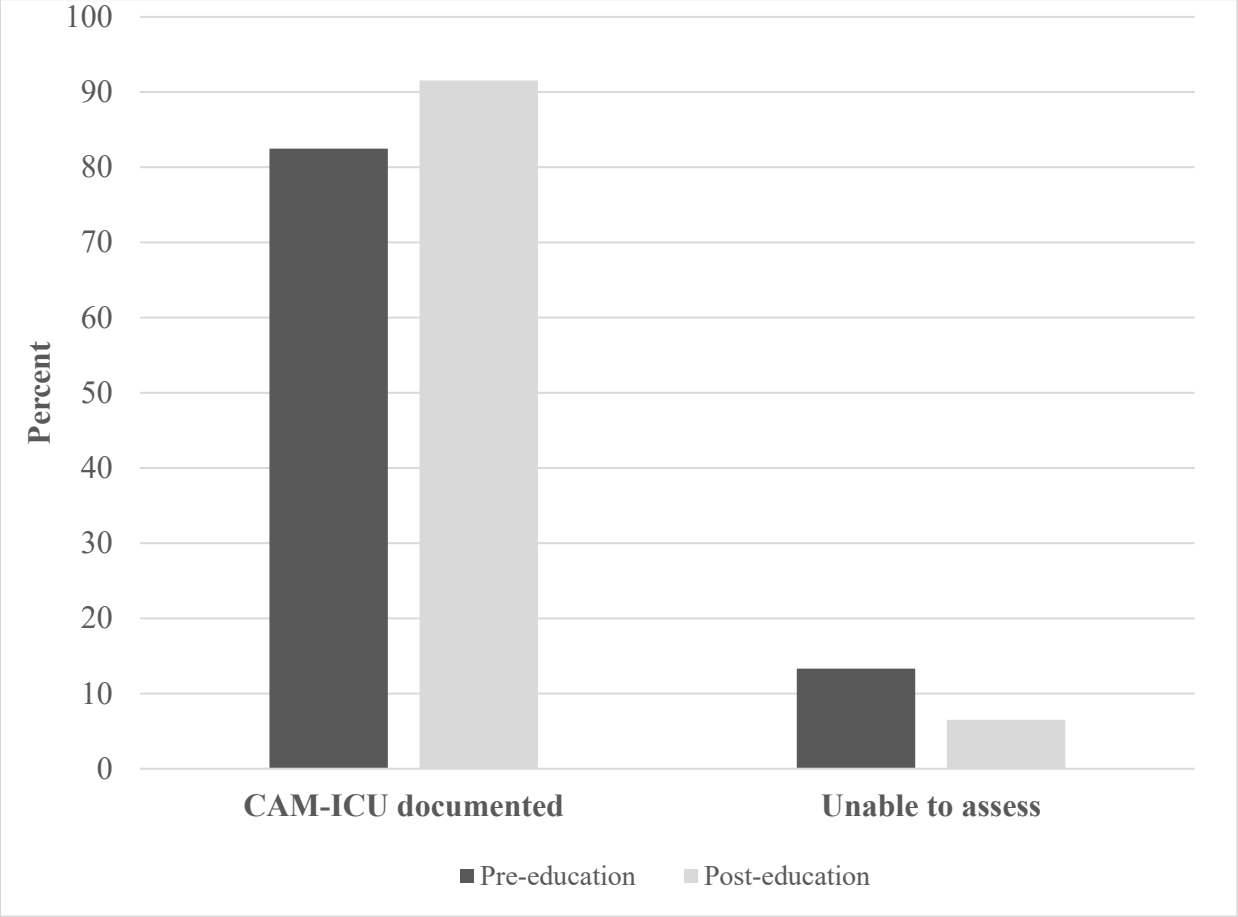
Pre-Education Data
CAM Documentation Compliance Rate = 273/331 (82.47 %)
CAM UTA = 44/331 (13.3 %)
Post-Education Data
CAM Documentation Compliance Rate = 338/369 (91.56 %); p <.001
CAM UTA = 24/369 (6.5 %); p <.001

Table 5. Multi-Disciplinary Discussion of CAM-ICU Assessment

	Pre-Protocol	**Post-Protocol**	**P-value**
RN Given the Opportunity to Report FASTHUGSBID During MDR?	**84%** - (58/69)	**93%** - (65/70)	.10
RN Reported CAM-ICU using FASTHUGSBID During MDR?	**4%** - (3/69)	**61%** - (43/70)	<.001**
RN used Brain Road Map to Discuss CAM-ICU (+) Patient's Plan of Care during MDR?	**0 %**	**67% -** (6/9)	
Legend: * is for P values < .05, and ** is for P values < .001			

Figures

Figure 1. CAM-ICU Documentation Data



Appendices

Appendix A: Staff Demographic Survey

1. Level of Nursing Education: circle highest level achieved:
    a) Associate Degree, Nursing
    b) Bachelor of Science in Nursing (BSN)
    c) Master of Science in Nursing (MSN)
    d) Doctorate in Nursing (DNP/PhD)

2. How many years have you been a nurse?
    a) 0-5 years
    b) 6-10 years
    c) 11-20 years
    d) > 21 years

3. How many years have you been an ICU nurse?
    a) 0-5 years
    b) 6-10 years
    c) 11-20 years
    d) > 21 years

4. Advanced nursing specialty certification (i.e: CCRN, CEN)
    a) Yes (Please list:)_____
    b) No

5. What shift do you work?
    a) 7am – 7pm
    b) 7pm – 7am
    c) 11am – 11pm
    d) 11pm – 7am
    e) Other _____

(Devlin et al., 2008)

Appendix B: Delirium knowledge nurse assessment: pre and post- intervention

1. Delirium is an underdiagnosed problem.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

2. Delirium is a common response to the ICU environment.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

3. Delirium is a problem that requires active interventions on the part of caregivers.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

4. Delirium is associated with higher patient mortality.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

5. ICU patients with delirium are rarely agitated.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

6. Initiation of antipsychotic therapy (e.g., Haldol) should be the initial intervention for all patients with delirium.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

7. Delirium is challenging to assess in ICU patients.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

8. Patients with delirium usually have symptoms that are consistent over the entire nursing shift.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
○	○	○	○	○

(Devlin et al., 2008)

Appendix C: Delirium Assessment Protocol

Intensive Care Unit Policy on Delirium Assessment

1. All* intensive care patients are required to be assessed for delirium at a minimum of once per shift, using a validated tool (ie, CAM-ICU or ICDSC).
    - *With the exception of patients who are ordered to maintain a continuous state of deep sedation and/or are receiving a continuous paralytic.

2. Nursing staff are required to document delirium assessment at least once per shift (every 12 hours).
    - If unable to perform delirium assessment, must indicate reason why in progress note.

3. Nurses are required to report on their patient's delirium status, (CAM-ICU +/-?), during interdisciplinary rounds using the VA approved FASTHUGSBID "ICU Multidisciplinary Rounding Report" format.
    - F**A**STHUGSBID: **A- Analgesia/Agitation** includes reporting on: 0-10 pain scale score? CPOT score? Frequency of assessment? Pain controlled? Medication(s)? History of dementia? **CAM-ICU +/-?**

4. If **CAM-ICU POSITIVE**, the RN will utilize the Brain Road Map for Rounds to guide the interdisciplinary discussion.

Appendix D: Delirious Mnemonic

DELIRIOUS

- **D** Drugs (continuous drips, Na+, Ca+, BUN/Cr, NH3+)
- **E** Environmental factors (hearing aids, eye glasses, sleep/wake cycle)
- **L** Labs (including Na+, K+, Ca+, BUN/Cr, NH3+)
- **I** Infection
- **R** Respiratory status (ABGs-PaO2 and PCO2)
- **I** Immobility
- **O** Organ failure (renal failure, liver failure, heart failure)
- **U** Unrecognized dementia
- **S** Shock (sepsis, cardiogenic)/Steroid

Appendix E: ICU MDR Report sheet with Brain Road Map for Rounds

** FASTHUGSBID Rounding Sheet (front side) **

VA | U.S. Department of Veterans Affairs, Veterans Health Administration, Lexington VA Health Care System

ICU Multidisciplinary Rounding Report

12/19/2019

F	Family discussion	**(Social Worker, RN)** Caregiver? Presence?
	Feeding	**(Dietitian, RN)** Oral or Enteral feeding? Small bore feeding tube? % of diet consumed?
A	Analgesia/Agitation CAM ICU	**(RN)** 0-10 pain scale score? CPOT score? Frequency of assessment? Pain controlled? Medication (s)? History of dementia? CAM ICU +/-? COWS? CIWA-r?
S	Activity	**(RN)** Red-phase 1? Yellow-phase 2? Green-phase 3?
	Sedation/vacation	**(RN)** RASS Score? Medication (s)?
T	Spontaneous Breathing Trial/oxygenation	**(RT, RN)** assess & trial to follow "wake-up" @ 0700; ventilator settings; VAE concerns
	VTE prophylaxis	**(PharmD, RN)** what action/drug?
H	HOB elevation	**(RN)** 30° or higher?
U	PUD prophylaxis	**(PharmD, RN)** what drug?
G	Glycemic control	**(PharmD, RN)** last FSBG/lab? Treatment?
S	Skin	**(RN)**HAPI/CAPI? Other issues? WOCN consult?
B	Bowel regimen	**(RN)** last BM? Stool softener? Other GI issues?
	Indwelling catheter	**(RN)** # of days with indwelling Cath? Remove?
I	De-escalation of antibiotics	**(PharmD, RN)** # of days? Renal status?
D	Device	**(RN)** Need for Restraints? Lines? # of days? Line removal?
	DNR/AND Status	**(Provider)** Goals of Care/LSTI note? Palliative Care?
	Disposition	**(Social Work, UM)** Transfer out of ICU? Where? Rehab?
	GOALS OF CARE TODAY:	

** Brain Road Map for Rounds (reverse side) **

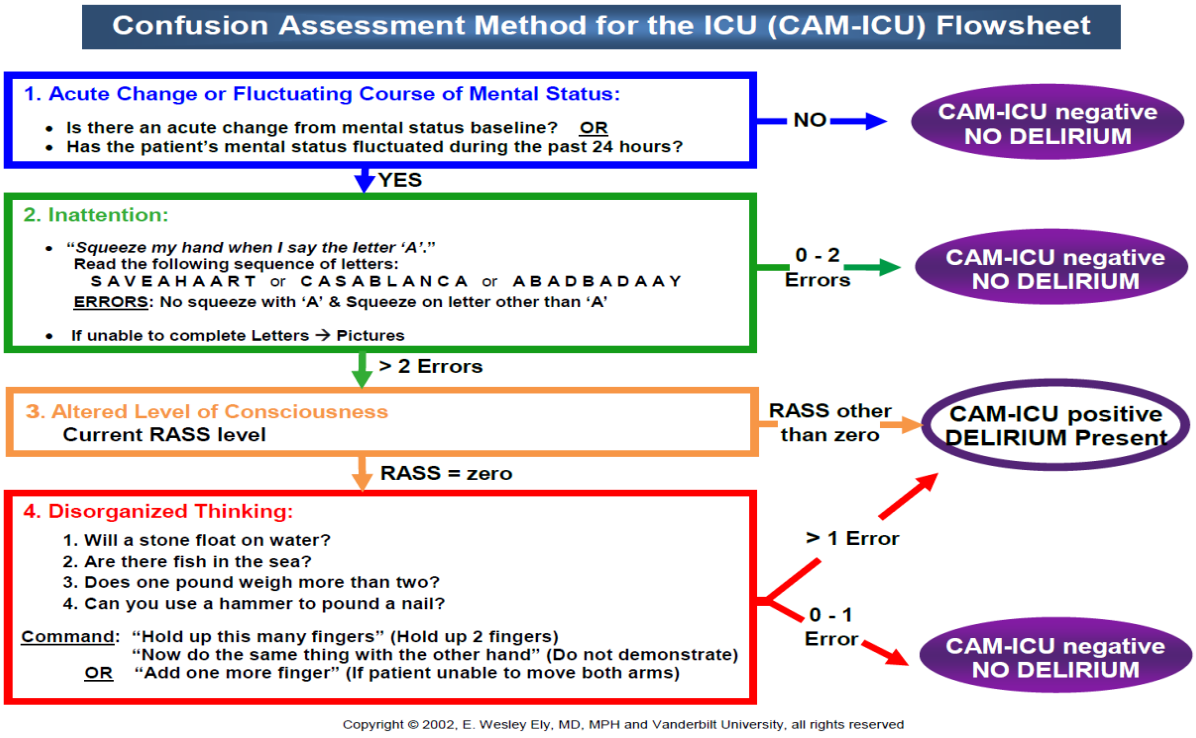
Brain Road Map for Rounds

Used during Multi-Disciplinary Rounds for patients who are CAM-ICU POSITIVE

12/19/2019

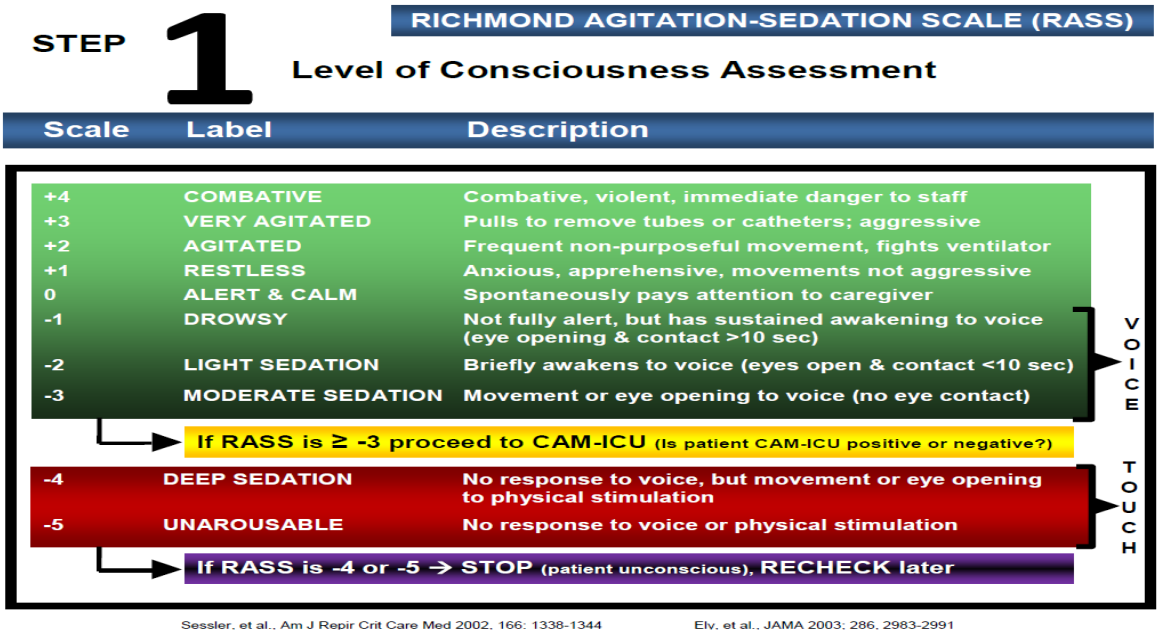
Investigate (Ask these questions)	Report (only takes 10 seconds)
Where is the patient going?	**Target** level of consciousness (RASS) =_____
Where is the patient now?	**Current/Actual** RASS = _____ **CAM-ICU** = Positive/Negative/UTA
Possible etiology of the current LOC/delirium status? (DELIRIOUS Mnemonic)	**D** - Drugs (Continuous sedation, Benzo's, Opioids, OD, EtOH intox.) **E** - Environmental factors (hearing aids, eyeglasses, sleep/wake cycle **L** - Labs (including Na+, K+, BUN/Cr, NH3+) **I** - Infection **R** - Respiratory status (ABG-PaO2 and PCO2) **I** - Immobility **O** - Organ failure (renal failure, liver failure, heart failure) **U** - Unrecognized dementia **S** - Shock (sepsis, cardiogenic)/ Steroid
Plan Moving Forward	**Example:** (Change sedation from Midazolam to Dexmedetomidine)

Appendix F: Confusion Assessment Method for the ICU Flowsheet



(icudelirium.org, 2019)

Appendix G: RASS



(icudelirium.org, 2019)

Appendix H: The Iowa Model of Evidence-Based Practice to Promote Quality Care

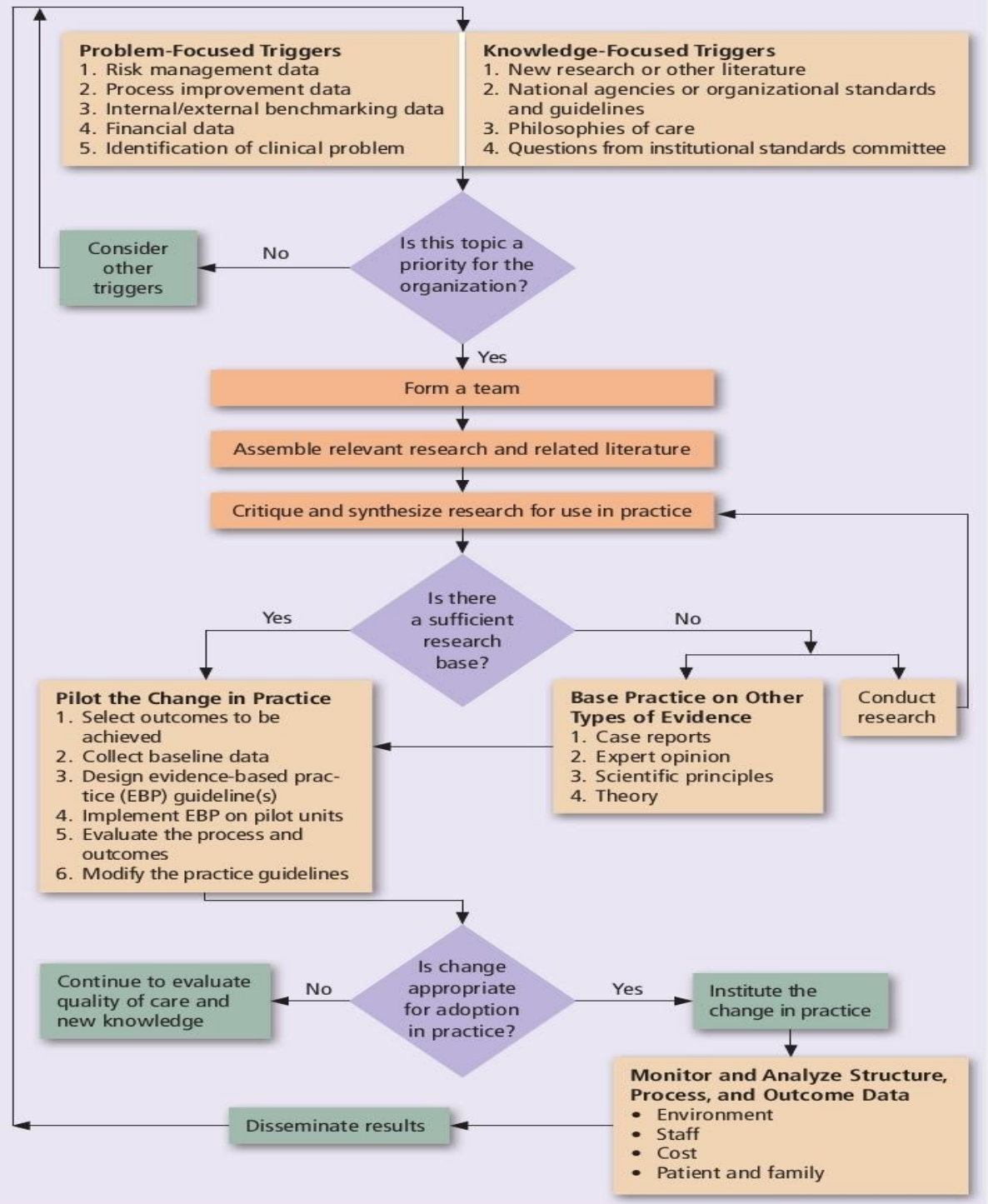


FIGURE 1. The Iowa Model of Evidence-Based Practice to Promote Quality Care

Note. Figure courtesy of Marita Titler. Used with permission.

(Brown, 2014)

Appendix I: Overview of Education Power Point Presentation

1	**Definition of Delirium and Different Types**
2	**Incidence of Delirium**
3	**Risk factor for Delirium**
4	**Nursing Screening Importance**
5	**New Delirium Screening Policy**
6	**CAM-ICU Overview**
7	**CAM-ICU Case Study**
8	**Brain Road Map for Interdisciplinary Communication Description**

Appendix J: Invitation/Cover Letter

To ICU Nurses:

We would like to formally invite you to participate in an educational program that evaluates nurse knowledge and perceptions about delirium and delirium assessment in your unit. Nurses are at their patient's bedside 24 hours a day and their knowledge and assessment skills vital for delirium detection and achieving improved patient outcomes. It is imperative for nurses to understand the different types of delirium, long term effects of delirium, how to properly assess for delirium using the institutions approved assessment tool, and the importance of interdisciplinary communication for prompt management of delirium. This program is part of a practice inquiry project for Doctorate of Nursing Practice Degree at the University of Kentucky's College of Nursing. The team of individuals assisting with this project includes: Daniel Williams - Primary Investigator (PI), Dr. Melanie Hardin-Pierce, Dr. Debra Hall, and Dr. Angel Coz.

The educational program will take place during your scheduled shifts in which nurses will rotate through the training. The program will take approximately 30 minutes to complete. If you choose to participate, you will first be asked to complete an anonymous pre-survey that will address your knowledge and perceptions about delirium, and delirium screening. Also, the presurvey consists of general demographic questions regarding your level of nursing education, years of nursing experience, years of ICU experience, advanced nursing specialty certification, age, gender, ethnicity, and shift worked. Then through power point presentation the PI will present information about delirium, delirium assessment protocol, how to use the Brain Road Map for interdisciplinary discussion, and how to perform a delirium screening using the CAM-ICU screening instrument.

During the educational intervention, you are simply asked to listen to the information presented. Questions or comments to the principal investigator about any of the information presented are welcome, however not required. You will receive paper copies of the case studies and screening instruments. After the presentation, you will be asked to complete the anonymous post survey. The post survey will also test if educational intervention impacts your perceptions and knowledge on delirium and delirium assessment. Although you will only get the personal benefit of the delirium education, your responses may help us understand more about nursing knowledge and perceptions about delirium and delirium screening practices.

Since there are only 35 nurses who work within your unit, we hope to receive completed questionnaires from all 35 as your answers are very important to us. While there are measures in place to avoid potential risks, some potential participation risks include breach of confidentiality and psychological distress. Your response to the survey is anonymous which means no names will appear or be used on research documents, or be used in presentations or publications. The research team will not know who the information you provided came from.

Your participation in this project is completely voluntary. You have a choice about whether or not to complete the survey, but if you do participate, you are free to skip any questions or

discontinue at any time. By completing the anonymous surveys, consent for the use of your responses is implied.

If you have questions about the study, please feel free to ask; my contact information along with Dr. Melanie Hardin-Pierce's is given below. If you have complaints, suggestions, or questions about your rights as a research volunteer, contact the staff in the Veterans Affairs Office of Research and Development at 859-233-4511 x4282. Thank you in advance for your participation in this project.

Sincerely,

Daniel Williams, RN, BSN, CCRN
University of Kentucky College of Nursing
502-263-3356

Advisor: Melanie Hardin-Pierce, DNP, RN, APRN, ACNP-BC
Professor College of Nursing
University of Kentucky
751 Rose Street
Lexington, KY 40536-0232
mhpier00@uky.edu
(859) 323-5658

Appendix K: Department Chief Letter of Approval

VA

U.S. Department of Veterans Affairs
Veterans Health Administration
Lexington VA Health Care System

1101 Veterans Drive
Lexington, KY 40502-2236
www.lexington.va.gov

Date: June 5, 2019

From: Jennifer Drumm, MSN, RN
Chief Nurse, Acute Care

Subject: Daniel Williams, DNP-ACNP Student Practice Inquiry

To: Institutional Review Board

As an authorized representative of the Lexington Veterans Affairs Health Care System (VAHCS), Troy Bowling Campus, I grant approval for Daniel Williams, DNP student to conduct his practice inquiry project at my organization. I understand that the purpose of this study is to examine nurse perceptions on delirium, as well as improve nursing knowledge, assessment practice, and interdisciplinary communication of delirium in the Intensive Care Unit at the Lexington VAHCS.

I grant permission for this project to involve interaction with the nursing staff of the Intensive Care Unit and I have determined these individuals to be appropriate subjects for this study. I understand that they will be asked to complete a survey prior to an educational session, and to complete a survey following the educational intervention.

To support this study, I agree to assist with the promotion of this education endeavor as well as permit Mr. Williams to review and analyze data that pertains to nurse perceptions and knowledge on delirium. The nursing staff will be permitted to attend the educational sessions during their assigned hours of duty.

Sincerely,

Jennifer Drumm

Jennifer Drumm MSN, RN
Chief Nurse, Acute Care
Lexington VA Health Care System
Troy Bowling Campus
Lexington, KY
859-233-4511 x4482

Appendix L: Nurse Manager Letter of Approval

June 13, 2019

RE: Daniel Williams, DNP-ACNP Student Practice Inquiry

Institutional Review Board:

As the Nurse Manager of the Intensive Care Unit at the Lexington Veterans Affairs Health Care System (VAHCS), Troy Bowling Campus, I grant approval for Daniel Williams, DNP student, to conduct his practice inquiry project within my department. I understand that the purpose of this study is to examine nurse perceptions on delirium, as well as improve nursing knowledge, assessment practice, and interdisciplinary communication of delirium in the Intensive Care Unit at the Lexington VAHCS.

I grant permission for this project to involve interaction with the nursing staff of the Intensive Care Unit and I have determined these individuals to be appropriate subjects for this study. I understand that they will be asked to complete a survey prior to an educational session, and to complete a survey following the educational intervention.

To support this study, I agree to assist with the promotion of this education endeavor as well as permit Mr. Williams to review and analyze data that pertains to nurse perceptions and knowledge on delirium. The nursing staff will be permitted to attend the educational sessions during their assigned hours of duty.

Sincerely,

Debra S. Hall

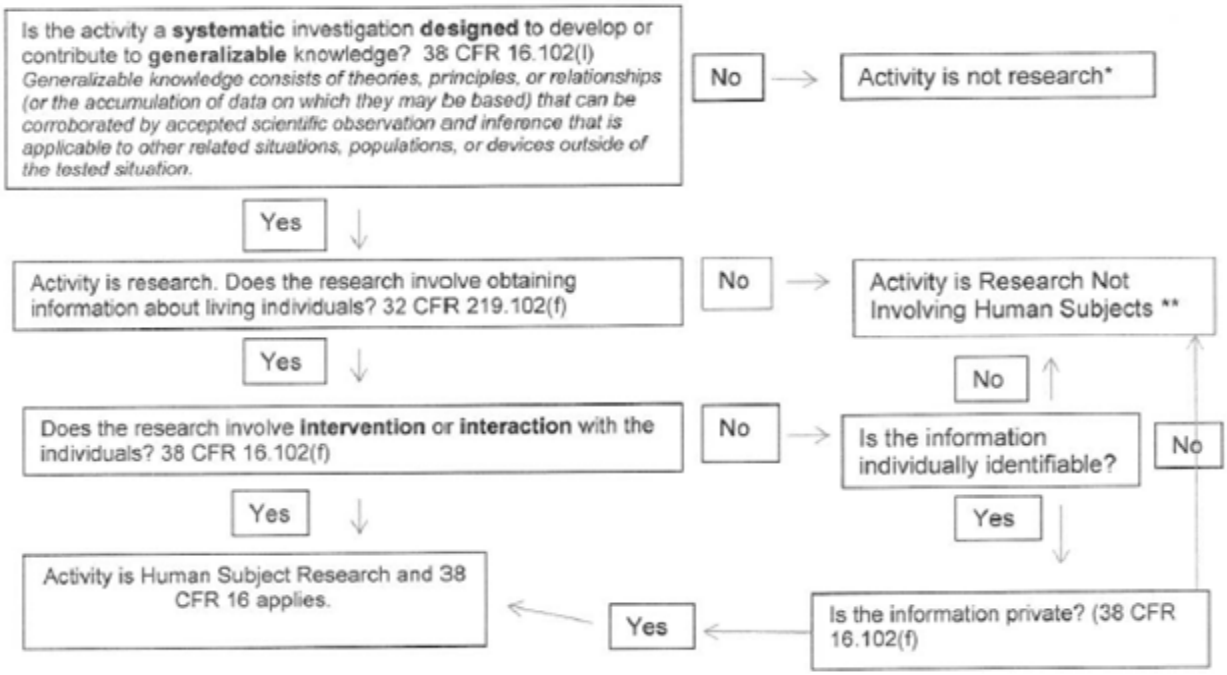
Debra S. Hall, PhD, MSN, RN, CCRN-K
Interim Manager, 6S ICU
Lexington VA Health Care System
Troy Bowling Campus, A604
1101 Veteran Dr., Lexington, KY 40502

Appendix M: Veterans Affairs Research Determination Aid for Human Subjects Research

Appendix 15: Determination Aid for Human Subject Research

Project Title: Implementing a Multicomponent Intervention to Improve Nursing Perception and Knowledge of Delirium Assessment in Intensive Care Patients
Principal Investigator: Deborah Hall/Daniel Williams (student)
Lexington VA Healthcare IRB number: IRB00008490

Human Subjects Research Determination, to be completed by qualified staff member.
Review the following questions to determine if the activity constitutes human subject research.



This activity has been determined to be (check one):

_____ *Not Research – submit to Department Chief or Privacy Officer
Comments:

_____ **Research Not Involving Human Subjects – Report to R&DC
Comments:

_____ Human Subjects Research – Seek Further Determination from the IRB

Reviewer Name (Print): PEDRO L. VERA Signature: [signature] Date: 5/24/2019

Reviewer Name (Print): _____ Signature: _____ Date: _____

Reviewer Name (Print): _____ Signature: _____ Date: _____

Appendix N: Veterans Affairs Privacy Office E-mail

RE: Project HIPAA Waver of Authorization

Addarat, April C <April.Addarat@va.gov>
Fri 5/24/2019 9:20 AM

To: Williams, Daniel B. <dbwi229@uky.edu>
Cc: Hall, Debra S. <DebraS.Hall@va.gov>; Hardin-Pierce, Melanie G. <Melanie.Hardin-Pierce@va.gov>; VHALEX Privacy Officer <VHALEXPrivacyOfficer@va.gov>; Floyd, Aaron R. <Aaron.Floyd@va.gov>; Smith, Paula <Paula.Smith@va.gov>; Dearinger, Angela T. <Angela.Dearinger@va.gov>; Hall, Barbara <Barbara.Hall2@va.gov>

Good Morning Daniel,

The first step you should take is to contact our Learning Resource Center here at the VA, point of contact is Aaron Floyd at 859-233-4511 Extension 4914.
Aaron will assure everything is in order for you. As far as a HIPAA waiver for UK's IRB this isn't something we typically provide for a capstone or school project. Since your work is not considered research that wouldn't be appropriate for us. As long as all the requirements here at VA are met, Aaron will confirm your access is approved/granted regarding patient PHI/III. Just to inform any patient information you'll be using for your project must be completely de-identified. If you have any questions for the Privacy Office after you've spoke with the Learning Resource Center feel free to contact us. Thank you.

Sincerely,

April Addarat
Government Information Specialist
Lexington VA Health Care System
1101 Veterans Drive
Lexington, KY 40502
(859)233-4511 Ext: 4201 Office
(859)270-4354 Cell
(859)281-3956 Office Fax
https://www.oprm.va.gov/foia/howto_file_foia_request.aspx
Suicide Prevention is Everyone's Business. #BeThere

Veterans Crisis Line 1-800-273-8255 PRESS 1

VA | U.S. Department of Veterans Affairs PRIVACY Builds Trust I CARE

From: Williams, Daniel B. <dbwi229@uky.edu>
Sent: Thursday, May 23, 2019 5:24 PM
To: VHALEX Privacy Officer <VHALEXPrivacyOfficer@va.gov>
Cc: Hall, Debra S. <DebraS.Hall@va.gov>; Hardin-Pierce, Melanie G. <Melanie.Hardin-Pierce@va.gov>
Subject: [EXTERNAL] Project HIPAA Waver of Authorization

VA Privacy Officers,

Good afternoon ladies, my name is Daniel Williams, I am a graduate student at the UK College of Nursing and I will be conducting my DNP Final Project in the Critical Care Unit at the VA. I am seeking your guidance on how to obtain a HIPPA Waver of Authorization. I am required to submit a HIPPA Waver of Authorization with my UK IRB application granting me approval to review patient records for my project. I have completed the VA onboarding process that included VA HIPPA training, as well as the Citi Program Biomedical Investigators and Key Personnel basic course which also included a HIPPA module. Is there any particular paper work I need to send provide to obtain a HIPPA Waver? **Thank you** for your assistance.

V/r,

Daniel Williams, Capt, USAF, NC, BSN, RN, CCRN

Appendix O: UKHC IRB Chair Not Human Research approval email

RE: NHR submission

Stafford, Pam <pastaf3@uky.edu>
Tue 8/20/2019 9:40 AM

To: Williams, Daniel B. <dbwi229@uky.edu>
Cc: Lake-Bullock, Helene <hlbullo@email.uky.edu>; Brown, Joe <joe.brown@uky.edu>

4 attachments (1 MB)
Aparaji.pdf; DiLiero.pdf; Ramoo_et_al-2018.pdf; NotHumanResearchNHRDeterminati_2019-08-19_0711(Daniel_B_Williams).pdf;

Good morning, Daniel.

On August 20, 2019, the Institutional Review Board (IRB) Chair or designee reviewed your attached NHR request form. Based on the information provided by you in the NHR form and our phone conversation/email exchanges, the protocol you are proposing meets the criteria for quality assurance/improvement (QA/QI) and does not need IRB review and approval. As you point out with the articles you attached, there have been publications on the subject matter in scientific literature and, therefore, the concept is not novel; if it was, the project would require IRB review and approval as a research activity involving human subjects. "Novel" is a concept the federal regulations consider in determining whether IRB review is required. Since other groups have evaluated and published this type of data and there is a body of literature out there, it would not be considered novel.

You can find a guidance document regarding QA/QI versus research here: https://www.research.uky.edu/uploads/ori-uk-research-vs-quality-assuranceimprovement-qaqi-guidance-pdf

This document outlines what activities require IRB review and approval: https://www.research.uky.edu/uploads/ori-d10000-when-do-activities-need-irb-review-and-approval-pdf

If anything should change regarding your proposed activity, please contact the ORI as IRB review and approval may be appropriate at that point.

Thank you,
-Pam

Pam Stafford, MA
Associate Director
Office of Research Integrity
University of Kentucky
316 Kinkead Hall
Lexington, KY 40506-0057
(859) 323-7399

Appendix P: Pre-implementation FASTHUGS Rounding Tool

VA | U.S. Department of Veterans Affairs
Veterans Health Administration
Lexington VA Health Care System

ICU Multidisciplinary Rounding Report

12/19/2017

	Family discussion	**(Social Worker, RN)** Caregiver? Presence?
F	Feeding	**(Dietitian, RN)** Oral or Enteral feeding? Small bore feeding tube? % of diet consumed?
A	Analgesia/Agitation	**(RN)** 0-10 pain scale score? CPOT score? Frequency of assessment? Pain controlled? Medication (s)? History of dementia? CAM ICU +/-? COWS? CIWA-r?
S	Activity	**(RN) Red-phase 1? Yellow-phase 2? Green-phase 3?**
	Sedation/vacation	**(RN)** RASS Score? Medication (s)?
T	Spontaneous Breathing Trial/oxygenation	**(RT, RN)** assess & trial to follow "wake-up" @ 0700; ventilator settings; VAE concerns
	VTE prophylaxis	**(PharmD, RN)** what action/drug?

Appendix Q: Post- Implementation FASTHUGSBID Rounding Tool

ICU Multidisciplinary Rounding Report

12/19/2019

	Family discussion	**(Social Worker, RN)** Caregiver? Presence?
F	Feeding	**(Dietitian, RN)** Oral or Enteral feeding? Small bore feeding tube? % of diet consumed?
A	Analgesia/Agitation CAM ICU	**(RN)** 0-10 pain scale score? CPOT score? Frequency of assessment? Pain controlled? Medication (s)? History of dementia? **CAM ICU +/-?** COWS? CIWA-r?
	Activity	**(RN) Red-phase 1? Yellow-phase 2? Green-phase 3?**
S	Sedation/vacation	**(RN)** RASS Score? Medication (s)?
T	Spontaneous Breathing Trial/oxygenation	**(RT, RN)** assess & trial to follow "wake-up" @ 0700; ventilator settings; VAE concerns
	VTE prophylaxis	**(PharmD, RN)** what action/drug?