Agitation Assessment and Management in the Emergency Department

by

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Abstract

Background: Agitation is common in the emergency department. When agitation is not detected early, patients can become aggressive and violent. This can lead to increased restraint use. When restraints are used, patients and staff are more likely to become injured.

Local Problem: An urban emergency department reported a lack of an objective tool for assessing patient agitation. The staff of the ED desired resources to better care for behavioral health patients.

Intervention: The aim of the study was to implement the Behavioral Activity Rating Scale (BARS) in the electronic medical record of an urban ED during a 14-week quality improvement project. The goals of the project were early detection and management of patient agitation, reduction of restraint use in the emergency department, and to determine the usability of the BARS using the System Usability Scale (SUS).

Results: The results of retrospective chart reviews revealed that BARS was documented frequently (n=4,867 documentations) by ED RN's to assess patient's with behavioral health and medical complaints (n=780). Though restraint use decreased in the first two months of the project, overall restraint use was increased in 2018 (μ=5.25; SD=3.10) compared to the previous year (μ=4.75; SD=2.99; p=0.71). However, patients who were placed in restraints, remained in restraints for fewer days in 2018 (μ=1.14; SD=0.69) compared to the previous year (μ=1.68; SD=01.20; p=0.04). The results of the SUS indicated that ED nurses found BARS to be usable.

Conclusion: The BARS is a quick and easy tool to assess for patient agitation. With the incorporation of agitation management interventions, the ED team can potentially manage agitation before violence occurs. Further studies are needed on the use of BARS towards managing patient agitation and reducing staff violence in the ED.

Behavioral health (BH) patients experience an extended length of stay (LOS) in the emergency department (ED) while awaiting medical clearance or disposition of care (Emergency Nurses Association, 2014; Nolan, Fee, Cooper, Rankin, & Blegen, 2015; Stephens, White, Cudnik, & Patterson, 2014; Warren et al., 2016; Weiss et al., 2012). The extended LOS, and busy ED environment can cause exacerbation of agitation in BH patients (Bowman & Jones, 2016; Lau, Magarey, & Wiechula 2012; Nicks, & Manthey, 2012, Zeller & Citrome, 2016). Agitated patients are more likely to become violent and require the use of restraints (Holloman & Zeller, 2012; Simpson, Joesch, West, & Pasic, 2014; Weiss et al., 2016; Zeller & Citrome, 2016). When patients are placed in restraints, staff and patients are more likely to be harmed (Gottlieb, Long, & Koyfman, 2018). Staff in the ED need tools to objectively assess and manage the care of agitated patients (ACEP, 2014; Lau et al., 2012; Manton, 2013; Zeller & Citrome, 2016).

The staff in a designated urban Baltimore ED reported a lack of an objective tool for measuring BH patient agitation. A quality improvement (QI) project was developed to change current practice by implementing the Behavioral Activity Rating Scale (BARS) for measuring agitation in BH patients (Manton, 2013; Nordstrom et al., 2012; Richmond et al., 2012) in the ED electronic medical record (EMR). Important concepts of the project were change, agitation and restraints. The system usability scale (SUS) and chart audits were used to measure the usability of the BARS tool post implementation (Kim et al., 2012).

Recommended by the ENA (Manton, 2013), the BARS is a seven-item validated tool designed to detect immediate changes in behavioral activity in BH patients (Swift, Harrigan, Cappelleri, Kramer, & Chandler, 2002). This early detection is important for behavioral control. Swift et al., (2002) reported that behavioral control is the most important focus in the care of agitated patients. Using an objective tool for measuring agitation, early warning signs of

agitation can be identified, and the patient can be de-escalated before becoming violent and requiring restraints (Nordstrom et al., 2012).

The purpose of the QI project was to implement the BARS tool in the EMR of an urban ED in Baltimore to provide nurses with a validated tool to measure patient agitation. The short-term goals of the project was to improve early detection of agitation, leading to better management of agitation through early interventions such as medications and de-escalation (Adams, Knowles, Irons, Roddy, & Ashworth, 2017; Berring, Pedersen, Buus, 2016; Garriga et al., 2016; Lavelle et al., 2016; Price et al., 2018). The long-term goals included reducing restraint use, and episodes of violence against ED staff from agitated patients. Lewin's change theory was used as a theoretical framework to guide the QI project as a change in the current practice of agitation assessment was identified.

Theoretical Framework

In Lewin's (1947) theory of change, three stages of change were described: unfreezing, changing, and refreezing. The process of change requires moving from a current process to a desired one. The three levels of change are determined by a force field with driving and restraining forces that facilitate or impede change. Driving forces include ambition, goals, or needs that forces movement towards or away from the change. Restraining forces oppose the driving forces. Increasing the driving forces towards the intended change aids in implementing the change (Lewin, 1947). To establish permanency of the change, the new force field of motivation is made to secure the change (Lewin, 1947).

Driving and restraining forces were analyzed to successfully implement the BARS tool in the ED. A restraining force to unfreezing change, was ED physician resistance to change the

status quo. The driving force for the unfreezing, transition, and refreezing of change was the use of the BARS tool for early detection of agitation to increase safety for patients and staff.

To implement the BARS tool, ED staff had to unfreeze the current process of assessing patient agitation. ED administration was provided evidence to support the need for the BARS for measuring agitation in BH patients. This was the motivation for the need for change in the unfreezing phase of change (Bateman, Edwards, & Hanchey, 2012).

During the changing process it is important to facilitate the movement towards change once the team has accepted the change (Bateman et al., 2012). To initiate the change of placing the BARS in the EMR staff was educated on the use of the tool. Superusers were used to facilitate and guide the change. The structure of the EMR was changed to include the use of the BARS. The BARS was designed as an automated prompt when patients present with a chief complaint that is a BH disorder.

To refreeze the change, the BARS was built into the EMR structure, and the use of the tool was reinforced by the superusers during the *go live* phase of the change implementation. The go live phase was defined as the time that the BARS tool was active in the EMR to be used for assessment by nurses. During the go live phase, staff was guided on the justification of using the new tool for measuring patient agitation. This helped to establish permanency of the tool (Bateman et al., 2012). The BARS validity and reliability as an agitation tool, and its use in the ED is presented in the literature review

Literature Review

The need for the use of a reliable method to detect and assess agitation in the emergency department (ED) is the focus of evidence presented in this literature review. The literature review

will begin with the validation of the BARS tool. The literature review will include information on the use of the BARS in the ED, staff's perception of the BARS tool, and the importance of early detection in agitation to implement interventions to reduce patient agitation levels (Appendix A).

BARS Validity and Reliability

The BARS is a valid and reliable assessment tool to detect patient agitation. In randomized controlled trials, the BARS was found to be a psychometrically valid and reliable tool for measuring agitation levels in patients before and after treatment with medications to reduce agitation. Swift, Harrigan, Cappelleri, Kramer, and Chandler (2002) found statistically significant convergent validity and correlation with baseline BARS to baseline Positive and Negative Syndrome Scale (PANSS) agitation scores, and the Clinical Global Impression-Severity of Illness (CGI-S) during their randomized controlled trial. Researchers concluded that the BARS tool is a psychometrically valid, sensitive, and reliable scale for measuring behavioral activity in agitated patients with psychosis.

In a randomized controlled trial, Pfizer (2001) concluded that the BARS scores had statistically significant correlation with baseline PANSS agitation items and baseline CGI-S scores. The researchers concluded that the BARS was more responsive to treatment effect than the PANSS and the CGI-S.

The BARS is a valid and reliable tool for detecting patient agitation. In randomized control trials, the BARS was found to have high validity and reliability (Swift et al., 2002; Pfizer, 2001). In validation testing of the BARS, researchers found the tool to have more sensitivity at

detecting the treatment effect of medications for agitation, and rapid behavior changes in psychiatric patients than other agitation scales (Swift et al., 2002; Pfizer, 2001).

BARS Used in the ED

In a narrative review of the best practices of management of agitation, Zeller and Citrome (2016) found that the BARS was a simple tool to use in the ED, particularly due to the difficulty of patients to self-rate agitation. Delays in medication use can allow the agitation to escalate, putting the patient, staff, and others at increased risk for harm. Researchers concluded that it is important to address agitated behavior rapidly and efficiently to ensure the safety of patient and staff and to facilitate quick intervention.

In a quality improvement project in a psychiatric emergency services (PES) department, Simpson, Pidgeon, and Nordstrom (2017) found that more staff felt that the PES was a safe unit after the implementation of the BARS tool. PES staff reported that in using BARS, agitation was addressed rapidly, and patients were appropriately medicated. Staff found the tool easy to use and helpful in agitation management.

In a retrospective chart review study, Schumacher, Gleason, Holloman, and McLeod (2010) found that ratings on the BARS of five or more were reliably associated with an order for behavioral management such as sedation medications or the need for restraints. The researchers found BARS to be a reliable predictor of behavioral management. During the study, patients with a BARS score of 5 or greater were approximately 13 times more likely to receive behavioral management than were patients with a score of 4 or less.

In a systematic review of randomized controlled trials, meta-analyses, and observational studies, Garriga et al., (2016) concluded that agitation needs to be initially managed with de-

escalation techniques and environmental modification as the first choice of intervention for agitation, with restraints as the last resort. Prompt assessment of agitation was found to be a critical step in successful agitation management. Early detection of agitation is key to prevent the rapid escalation from agitation to violent behaviors. As patients who are agitated may become more agitated when using self-rated agitation scales, objective agitation rating tools such as BARS allows for rapid assessment of patient agitation leading to interventions to reduce agitation.

The BARS agitation rating tool is recommended for the ED due to the ability to simply, objectively, and rapidly rate patient agitation, leading to intervention (Schumacher et al., 2010; Zeller & Citrome, 2016). This is ideal in the fast-paced ED. The BARS is a valid and reliable tool in the ED to objectively communicate patient agitation between nurses and physicians to facilitate early intervention (Schumacher et al., 2010; Simpson et al., 2017). Staff in the ED reported that the BARS tool is easy to use, helpful in the management of patient agitation, and helps to ensure safety of the staff when patients become agitated (Simpson et al., 2017). The early detection of agitation is a critical step to prevent the escalation from agitation to violence. Using objective tools such as BARS to measure agitation, the nurse can rapidly detect agitation and intervene before the patient escalates to violence (Garriga et al., 2016).

Methodology

A QI project was planned to implement the BARS tool in the EMR for early detection of patient agitation in the ED (Appendix C). The focus of this project was to improve the care of BH ED patients. The methods of the project were iterative based upon findings from the data collection and feedback from users of the BARS tool. The intended benefits of the project were to provide safer care for ED BH patients within the usual nurse-patient care interaction.

Anticipated risks were minimal and only pertained to patients who were not screened using the BARS tool where early agitation may not be detected. Risks to privacy were prevented through deidentifying the collected data from the project. The applicability of the project results was intended for continued improvement of this project in the designated ED.

The project took place in an urban Baltimore ED. The sample included ED nurses (n=97). The implementation plan was conducted in a 14-week time-frame. The project plan included the project detailed timeline, data collection and analysis, plan for Institution Review Board (IRB) approval, and sustainability.

Timeline

To prepare the project implementation team, eight superusers attended a one-hour training of the use of the BARS tool in August 2018 (Appendix D). The superusers engaged in discussion of the BARS tool and proper use of the tool and interventions for patient agitation. Superusers applied their learning by engaging in case scenarios of agitated patients (Appendix E) while completing a training worksheet (Appendix F).

To initiate the change of placing the BARS in the EMR, staff was educated on the use of the tool in September 2018, prior to the *Go Live* phase of the project. An online module was created to educate nurses on the BARS tool and its use. The module was placed in the hospital's online learning system. Nurses were assigned to complete the module by September 2018. At the beginning of September 2018, superusers conducted four-hour open sessions on the unit where nurses practiced using the BARS tool and selecting appropriate interventions for patient agitation based on the BARS score. The superusers used the scenarios from the superuser training during the on unit open sessions (Appendix E) and use the training worksheets to apply their learning (Appendix F).

Nurses began using the BARS tool to screen for patient agitation on September 17, 2018. Superusers were used to facilitate and guide the change. During each nurse shift huddle, charge nurses briefly discussed the BARS tool, reminded nurses to complete the online education, and reminded nurses to use the tool during the implementation of the BARS tool for the QI project.

Data Collection

During the implementation of the QI project, data was collected on the number of nurses who completed the online and on unit BARS education. This information was compared to the total number of nurses in the ED (n=97). Aggregate data from retrospective chart reviews were conducted to include the nurse's documentation of the BARS tool, the chief complaints associated with the BARS assessments, interventions associated with the ratings on the BARS, restraint use in the ED, and episodes of violence indicated on the BARS report.

A BARS report was created in the EMR where data related to the BARS nurse documentation was automatically queried and de-identified. This data was used to analyze the project and determine the BARS usability towards the intended goals and outcomes of the project. Collected data was protected in a password protected computer file.

Data collection was conducted by the DNP student weekly during the project implementation for nurse's compliance with using the BARS to assess every BH patient in the ED, and the selection of appropriate interventions for agitation for each patient who presents with a BH complaint. The pre and post agitation intervention BARS scores were collected. Monthly restraint use data was collected to determine the number of patients who were agitated and placed in restraints.

A nursing survey was administered during the last two weeks of the implementation phase of the QI project. The survey included questions related to the SUS (Appendix G) to determine the usability of the BARS tool. The survey also included nurse demographics, and unit safety questions.

"The System Usability Scale (SUS) provides a "quick and dirty", reliable tool for measuring the usability. It consists of a 10-item questionnaire with five response options for respondents; from Strongly agree to Strongly disagree." (Usability.gov, 2017, para. 1). It is a valid and reliable tool for predicting usability (Brooke, 2013). Nurses completed the SUS at the end of the implementation phase to determine the usability of the BARS tool.

Data Analysis

Aggregate data from the BARS chart review report were entered in an Excel spreadsheet for analysis. Restraint use during the implementation phase in 2018, and in the same monthly time-frame in 2017 were analyzed using a chi-squared test with a significance level set ($p=0.05$) and a confidence interval (CI) of 95%.

Descriptive statistics were used to analyze the nurse's compliance with using the BARS tool to assess patients presenting to the ED with a BH complaint. De-identified BARS pre and post scores were compared to determine the effectiveness of the interventions to resolve agitation. The SUS was analyzed to determine the nurse's satisfaction with the ease of using the BARS tool using an independent t-test. The significance level was set ($p=0.05$); with a confidence interval (CI) of 95%.

IRB Approval

The proposal for the QI project was submitted to the IRB at the hospital to determine that the project was not a human subject research project. A QI determination form was completed

and submitted with the project proposal to the hospital's IRB coordinator. After the IRB coordinator determined that the project was non-human subject research and was a QI project, the project implementation began in August 2018 with education of the nurses to prepare for the go live phase on September 17th, 2018.

Sustainability

The structure of the EMR was changed to include the use of the BARS. The BARS was designed as an automated prompt when patients present with a chief complaint that was a BH disorder. The BARS design included an indicator that turned red to remind nurses to document the BARS every two hours during patient rounding. The BARS was built into the EMR structure, and the use of the tool was reinforced by the superusers during the implementation phase of the change implementation. During the implementation phase, staff was guided on the justification of using the new tool for measuring patient agitation. This helped to establish permanency and sustainability of the tool (Bateman et al., 2012). The analysis of the SUS and the overall project results was used to improve the BARS in the ED to meet the needs of the ED.

Results

The results of the project included the data collected for the BARS weekly aggregate report data, monthly restraint use data, ED BH demographics for visits compared to actual patient numbers, and the results of the nurse survey for all participants (n=30).

Documentation of BARS

The BARS was documented by nurses 4,867 times on ED patients visits for BH patients (n=753) and non-BH medical patients (n=27) where nurses manually added the BARS to the chart if the patient had a history of violence, or suddenly became agitated (Appendix I). Of the total patient visits where nurses assessed patients using the BARS (n=780), 206 patient visit

documentations included patients rated as agitated (26.41%). The goal for the final weeks of the project was for nurses to document patient agitation using BARS every two hours for >75% of the patient charts (Appendix H). The results of were nurse's documentation using the BARS was every two hours on 65.77 percent of all patient visits (n=513).

Behavioral Health Patients

The total number of BH patients during the study was collected (n=239) and compared to the previous timeframe in 2017 (n=242). There were more repeat visits for BH patients in 2018 (n=701) when compared to 2017 (n=594), resulting in an 18% overall increase in BH visits in 2018 compared to 2017.

Restraints

Nurses identified 18 patients as violent (2.31%), and 21 patients were placed in restraints (2.69%). The most common chief complaints for patients who were identified as violent was suicidal ideation (n=6; 33.33%). Restraint use in 2018 was collected (μ=5.25; SD=3.10) and compared to 2017 (μ=4.75; SD=2.99). In the first two months of the BARS implementation restraint use was decreased compared to the previous year. However, restraint use was increased in the months of November and December (Appendix J) during the implementation phase. Overall, restraints were increased 11% during the BARS implementation in 2018 (n=21) compared to 2017 (n=19). Based on the results of the chi-square test the association between restraint use pre and post implementation of the BARS was not statistically significant, indicating that restraint use and the BARS are independent of one another (OR=0.88; 95% CI=0.46, 1.69; p=0.71).

Patients who were restrained, were in restraints for fewer days in 2018 compared to 2017 (Appendix K). Based on the results of the independent t-test patients remained in restraints seven fewer days in 2018 (μ=1.14; SD=0.69) compared to 2017 (μ=1.68; SD=01.20). The results of the independent t-test were statistically significant (p=0.04; t-crit=1.70; tstat=1.80).

Survey

A survey was distributed to ED nurses (n=97) on day, evening, and night shifts. The response rate to the survey was 30.93% (n=30). Of the nurses who completed the survey, some nurses omitted data related to the nurse demographics, and unit safety questions (n=5) and were excluded from the data analysis of the SUS compared to these variables (Appendix L).

System Usability Scale. The SUS was used to determine the usability of the BARS. ED nurses who completed the SUS were included in the data analysis (n=30). The average score for the SUS is 68 (Usability.gov). The results of the survey were an average score of 83.46 (SD=11.73) with a range of 50-100.

Nurse Satisfaction with BARS. Majority of nurses (n=13; 52%) reported that the use of the BARS helped them to better detect and manage behavioral health patients. Majority of nurses felt unsure of whether the BARS made them feel as though the unit was safer (n=11; 44%). Almost all nurses (n=24; 96%) reported that the BARS indicator turning red helped to remind them to complete the assessment (Appendix M).

Discussion

As noted in the project results, the overall use of restraint use was increased during the implementation of the BARS. While this was an unexpected finding, the increase in restraint use may be related to the increase volume of patients. The patient acuity during the implementation

phase was higher for all patients, including BH patients for November and December. This may be a reason for the increase in restraint use during these months. When overall patient acuity is higher, the ED nurse may prioritize care of medical patients over behavioral patients resulting in a delay in detection and management of agitation sooner. Nursing staff reported episodes where patients were placed in restraints by security before attempts to intervene by nursing staff could occur. Additionally, there was a new security team in place during the end of the BARS implementation. A full team approach to include training of security in de-escalation when safe is an important consideration in reducing restraint use.

The BARS included a rating of violent that suggested the need to restrain patients to prevent harm to the patient or others. The increase in restraints may also be attributed to the detection of violent patients earlier in 2018 with the use of the BARS where violent patients were detected and restrained before they could harm themselves or others. This may have a clinical implication to detecting and managing violent patients before actual harm occurs to patients or to ED staff. As found in previous studies, the use of the BARS led to rapid assessment leading to rapid management of agitation (Garriga et al., 2016) particularly with patients who had a BARS score greater than five (Schumacher et al., 2010). Schumacher et al., (2010) also found that when the BARS was greater than five, interventions such as medication or restraints were used to manage the patient's agitation. This is similar to the results found in this project.

Though total restraint use was increased, the total days in restraints were decreased during the implementation of the BARS tool. This may be due to the nurses detecting the need to remove patients from the restraints sooner with the ratings on the BARS indicating that the patient was calm and safe to remove from restraints. The results are clinically relevant as patients were removed from restraints sooner during the implementation of the BARS than the previous

year. This suggests that the use of the BARS may help nurses to detect violent patients who require restraints while also helping nurses to also detect when patients are clinically ready to be removed from restraints sooner. The reduction in the total days in restraints, despite the increased use during the implementation phase may suggest that the BARS was useful in the management of BH patients while restraints to help discontinue the use of restraints sooner.

The survey results indicated that the nurses felt that the BARS had high usability in the ED. Nurses also used the BARS tool with high frequency and chose to add the BARS to their patients charts when there were indications of agitation or risks for violence. This suggests that the nurses found the BARS useful and easy to use which likely led to the frequent use of the tool. These findings are similar to prior studies on the use of the BARS where ED staff found the tool to be easy to use (Zeller & Citrome, 2016; Simpson et al., 2017; Garriga et al., 2016)) and a reliable predictor of patient behavior (Swift et al., 2001; Pfizer, 2002; Schumacher et al., 2010).

Limitations

Limitations of the project was the BARS agitation assessment tool was limited to use in the ED only during the study. This was an intended limitation. However, since nurses on the critical care and medical-surgical units were not trained on the use of the BARS, the BARS assessment findings were designed to remain in the patient's chart where nurses throughout the hospital can easily view the documented assessment by the ED nurse. Clear language was used to provide the nurses throughout the hospital with communication of whether a patient was calm, agitated, or violent. There were no associated costs with the project.

Implications

ED's can use the BARS to improve the assessment and management of agitated patients. This can improve safety in the ED. Successful implementation of tools to improve the care of agitated patients must be carefully developed and include additional resources. While the BARS is an effective tool for assessment of agitation leading to early intervention, staff need medication protocols, and training on the strategies to manage agitated patients while also reducing restraint use. Though the restraint use did increase during the project, including a medication management strategy associated with the BARS agitation levels has the potential to improve the management of agitated patients while also reducing restraint use.

While this QI project was implemented in the ED, the BARS is simple and easy to use in patient units outside of the ED. Patients and staff throughout a health care facility could benefit from the use of an easy to use tool that aids in the rapid assessment and management of patient agitation.

Conclusion

Assessment of agitation in behavioral health patients is important to determine the best management strategies to prevent escalation to violent behaviors. This requires a change in current practices to implement the best evidenced-based approaches to agitation assessment (Appendix A). To guide the change in practice a change theory is used to gain a deeper understanding of the processes required to implement permanent change and sustainability of practice change.

The BARS is a valid tool for easy and rapid measurement of patient agitation. When used with frequency, the nurse can detect subtle changes in patient behaviors that can lead to increased agitation and violence. This is important for the safety of both the patient and the ED staff. Changing current practice to implement the BARS tool is vital to help nurses to better

detect and assess patient agitation. A detailed plan to implement this important practice change is important to facilitate the change (Appendix B). Through improvement in agitation assessment, patient agitation can be better managed. This improvement in the approach to assessing agitation may improve patient safety and health outcomes for BH patients.

To facilitate and sustain change in the assessment and management of patient agitation, a change in the ED culture is crucial. The use of a valid and reliable tool alone, is not enough to improve the care of BH patients. It requires a change in the culture and resources in the ED. This includes staff training on the use of de-escalation and diversional activities to mitigate agitation before escalating to violence and avoidance of restraints when possible. The ED also needs additional resources such as evidence-based medication protocols to safety and effectively manage agitation. With the addition of evidence-based resources, guidelines, and the use of the BARS, ED's can offer an effective bundle of care services for quality care to BH patients.

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Appendix A

Table 1. Evidence Review Table

Author, year	Study objective/intervention or exposures compared	Design	Sample (N)	Outcomes studied (how measured)	Results	*Level and Quality Rating
Adams et al; (2017)	To assess the effectiveness of clinical education to identify patients with a high risk for violence and to reduce the frequency of violent incidents.	Before and after design with an education intervention that included assessment, planning, implementation [crisis], post incident	Nurses, nursing assistants, and patient care assistants (N=65)	Knowledge, confidence and capability of direct care staff to prevent/manage violent/aggressive incidents were to include the frequency and recurrence of violence/aggression.	The use of verbal de-escalation increased significantly (p=0.011, 1df) and violent incidents decreased. Each of the violent patients met a high risk for violence criteria.	4B
Berring, Pedersen, & Buus, 2016.	To determine patient and staff definition of violent and threatening situations and whether de-escalation situations was successful in threatening situations.	An ethnographic multiple case study	Patients and staff who were involved in threatening or violent situations.	Comparative analysis of the case study database. Notes from interviews were compared.	De-escalation consisted of creating a safe place (keeping a safe distance, scanning the environment for safety), establishing empathic acts, followed by social interactions (sharing responsibility and being attentive; nurses showing they care),	6B

					which promoted human integrity. Third, it was possible to de-escalate anger by engaging in creative and reflecting on the situation.	
Bowman & Jones, 2016	To determine the prevalence of individuals in psychiatric crisis presenting to emergency departments at general hospitals. The consumer experience of presenting to an emergency department in psychiatric crisis. To determine if the recovery approach be implemented in the emergency department. If sensory interventions can be a successful intervention in emergency departments.	A narrative review of quantitative and qualitative evidence	Relevant qualitative and quantitative articles investigating mental illness in emergency departments (N=75). Articles investigating sensory interventions in acute psychiatry were found (N=35)	PubMed, MEDLINE, Psych Info, and Psych Lit were searched using keywords 'mental health', 'mental illness', 'schizophrenia', 'psychosis', 'mental disorders', 'psychiatric emergency', 'emergency psychiatry', 'psychiatric triage.'	ED mental health patients experience an increase wait time exceeding 4 hours. The extended wait time can lead to agitation. The LOS for ED mental health patients was from 4 hours to over 20 hours. The noisy ED environment can lead to distress, agitation, aggression and sometimes violence in mental health patients. One study that surveyed Australian EDs (n=116) found that restraints were used for a range of conditions, specifically, violent or aggressive behavior (52%) and psychosis (32%). ED staff (90%) reported physical	5B

					assault or intimidation, with 100% reporting verbal abuse.	
Garriga et al., 2016	To determine the treatment and management of agitated patients	Systematic Review	Systematic Review of 124 that included randomized control trials (N=30), meta-analyses (N=39), and observation and open label studies (N=55).	Comparison of the best practice treatment and management of agitated patients in emergency psychiatry.	De-escalation and environmental modification is first choice, followed by medications to calm and not over-sedate. The oral route was preferred over the IM route. IV route was not recommended. Several agitation scales were used in the studies reviewed to include BARS (N=4).	2A
Gottlieb, Long, & Koyfman, 2018	To provide an evidence-based summary of the current evaluation and management of acute agitation in ED patients.	Literature review	A literature review of articles related to agitation in the emergency department (N=126)	A search of the evidence in PubMed and Google Scholar with the keywords *agitation*, *psychiatric*, *sedation*, and *emergency*.	Acute agitation is common in the ED, and results from disorders such as metabolic, neurologic, infectious, toxicologic, and psychiatric etiologies. Several studies suggested that restraints are used in over half of patients who have agitation. The use of restraints can cause the patient harm. The BARS tool	5B

					is rapid and reliable for the ED, and unlike other agitation scales, it does not require the patient to answer questions, which can be challenging in patients with agitation.	
Lau, Magarey, & Wiechula, (2012)	To explore the cultural aspects of violence in an ED	Ethnographic Study	Violent incident questionnaires (N=103), nurse interviews (N=34), and observations (N=242.5 hours)	Questionnaires were analyzed using SPSS.	Most of reports of violence were associated with warning signs such as non-verbal signs, a grumpy demeanor, tense posture, restlessness, pacing, verbal signs, shouting, whispering, or mumbling. The researcher identified that there was a "turning point" that the nurse must recognize patient's behaviors that could lead to violence and could use empathetic communication to avoid violent patient episodes.	5B

Lavelle et al; (2016)	To explore the factors leading to de-escalation techniques and the effectiveness of de-escalation.	Retrospective case note analysis	Agitated or aggressive patients (N=522)	The episodes of conflict (aggression) or containment (such as sedation) were measured during the first two weeks of admission.	Patients (53%) experienced de-escalation during the first two weeks of admission, with the majority of these (37%) experiencing multiple episodes. De-escalation was successful in 60% of cases.	4B
Nicks & Manthey, 2012	To examine the impact of resource utilization, throughput, and financial impact for psychiatric patients awaiting inpatient psychiatric placement	Retrospective cohort analysis on adult psychiatric admissions in the ED at a Level 1 Trauma Center and Tertiary Referral Center	Psychiatric patients presenting to the ED (N=1438).	The main outcomes were ED LOS and payments for services. Deidentified data was collected from the electronic health record from psychiatric consultation, admissions or transfers.	The results were 1,438 patients had psychiatric consults where 505 (35.1%) requiring inpatient psychiatric admission. ED LOS was significantly longer for psychiatric admissions (1089 min, CI (1039–1140) versus 340 min, CI (304–375); $P < 0.001$) compared to non-psychiatric admissions. Psychiatric boarding accounted for a direct loss of	4B

					($1,198) compared to non-psychiatric admissions. The loss of bed turnover and opportunity cost due to loss of those patients, psychiatric patient boarding cost the department $2,264 per patient.	
Nolan, Fee, Cooper, Rankin, & Blegen, 2015	To inform stakeholders and policymakers about the incidence and duration of ED boarding, and its associated factors, in the population of US ED visits.	National Hospital Ambulatory Medical Care Survey ED data stratified by psychiatric vs. non-psychiatric patient visit, boarding status, and patient and characteristics of the hospital.	Patient records (N=34,134) in the ED in 2008.	Pearson's chi-square tests were used to describe hospital and patient characteristics. Multilevel multivariable logistic and linear regressions were used to determine associations with boarding and boarding time.	The results were 21.5% of all psychiatric ED patients were boarded (LOS > 6 hours). With controlling of confounders, the odds of boarding for psychiatric patients were 4.78 (2.63-8.66) times higher than non-psychiatric, and psychiatric patients boarded 2.78 (1.91-3.64) hours longer than non-psychiatric.	6B
Pfizer (2001)	To test the validity and reliability of the BARS tool	Randomized Controlled Trials	Two studies: Study 126 (n=79) and Study 121 (n=306).	Cohen's criteria, Wilcoxon Rank Sum Test, Clinical rater agreement (n=54) with clinical vignettes (n=6)	For convergent validity BARS scores had a statistically significant correlation of moderate magnitude with baseline PANSS	2A

					agitation items (p=0.003) and baseline CGI-S scores (p=0.0003). The effect size for the BARS was larger than for the PANSS agitation items and CGI-S, indicating that the BARS was the most responsive to treatment effect. The interrater reliability was near perfect (0.999) for the first assessment and perfect (1.0) inter-rater reliability was achieved for the second assessment. The researchers concluded that the BARS was more responsive to treatment effect than the PANSS and the CGI-S.	
Price et al; (2018)	To investigate patient perspectives on barriers and enablers to the use and effectiveness of de-escalation techniques for	Descriptive qualitative research	Inpatient semi-structured interviews (N=26)	To explore staff, patient and environmental factors influencing the use and effectiveness of staff de-escalation	Restrictive practices, rather than de-escalation techniques, are used in response to escalating patient behavior. Under-use of de-escalation techniques was	6B

	aggression in mental health settings				attributed to: lack of staff reflection on culture and practice and a need to retain control/dominance over patients. Ward rules, patient factors and a lack of staff respect for patients diluted their effectiveness. Participants identified a systematic process of de-escalation, rule subversion, reduced social distance and staff authenticity as enablers of effective de-escalation.	
Schumacher, Gleason, Holloman, & McLeod, 2010)	To examine the implementation of the BARS tool during patient triage in an inner-city emergency department for patients with a psychiatric compliant.	Retrospective chart review.	Charts reviewed from patients who presented to the emergency department with a psychiatric complaint (N=284).	To determine if the BARS tool was useful in behavioral management triage strategy of psychiatric patients.	Only 46% of the charts reviewed contained a BARS assessment. The tool was used less during the night shift compared to day and evening shifts. When used, elevated ratings on the BARS tool were associated with an order for behavioral management such as	4B

					sedating medication or restraints.	
Simpson, Joesch, West, & Pasic, 2014	To provide descriptive data and characteristics that increase the risk of restraint and seclusion for mental health patient's ins psychiatric emergency services (PES) unit.	Retrospective chart audits	Psychiatric patient encounters (N=5335) in a psychiatric emergency department.	The staff used a symptom template to rate patients' clinical symptoms on a "0–6" Likert scale plus, a "7" signifying "unknown." The scales were dichotomized into "severe" symptoms rating of 5–6. Patients were rated as disruptive when uncooperative, with hostile/aggressive, speech/ communication disorder and excitement. Patients were rated as "severe" resulted in restraint/seclusion.	Twenty-five percent (n=1321) arrive in restraints where 34 percent of these (n=434) were placed in restraints upon arrival to the PES unit and 66 percent (n=868) were removed from restraints upon arrival. Of the 868 who were removed from restraints, 12 percent (n=105) were later placed in restraints again. Patients placed in restraints were severely disruptive (OR=9.77; 95% CI 6.01, 15.87; p=<.01), severely psychotic (OR=2.15; 95% CI 1.41, 3.28; p=<.01), severely suicidal (OR=0.57; 95% CI 0.33, 0.99; p=0.47), or severely impaired (OR=2.03; 95% CI 1.41, 2.92; p=<.01).	4B

Simpson, Pidgeon, & Nordstrom	To introduce the BARS in a psychiatric emergency service (PES) to help staff assess patient agitation, initiate treatment, and feel safer in their workplace.	Quality Improvement Project	N=21	Use of the BARS tool in the ED with vital signs	Twenty staff completed the pre-survey, and 21 staff completed the post-survey. All respondents felt familiar with the BARS, and the use of the BARS was common both before and after implementation (55% versus 75%, p=.13). After one year of implementation, more staff felt that the PES was a safe unit (85% versus 100%, p=.03). Staff's reported use of the scale correlated with their understanding the scale (p=.004) and finding it helpful (p=.003)	6B
Stephens, White, Cudnik, & Patterson, 2014	To identify patient factors correlated with extended lengths of stay (>24 h) for mental health patients in the ED	Retrospective case control design of patient records	Mental health patients (N=2447) in the emergency department. Patients records were divided into those with an	Patient data was extracted from a web-based ED information system to include LOS, patient demographics, day or arrival, admission or discharge status, chief complaint, and	The results were 184 patients (0.5%) experienced EL-LOS. Of these patients, 162 (88% of EL-LOS patients) were mental health. Mental health patients were more likely to experience EL-LOS, than non-	4B

			extremely long length of stay (n=162) and those without an extremely long length of stay (n=2243). Mental health patients were selected from the group without an extremely long length of stay and placed in a control group (n=121). Patient charts were selected from the extremely long length of stay (EL-LOS) group and placed in the case group (n=121).	diagnosis. Data was formatted into a comma-separated-value text file and imported into statistical data analysis software for analysis.	mental health patients (odds ratio [OR] 105, 95% confidence interval 67.0–164, $p < 0.0001$). Patients with EL-LOS had a median LOS of 27.8 h (SD 7.42), compared to 3.92 h (SD 4.25) for those without EL-LOS. Mental health patients with an EL-LOS had a median LOS of 33.5 h (SD 11.3), compared to 5.68 h (SD 4.68) for those without an EL-LOS.	
Swift et al., 2002	To validate the BARS tool for	Randomized control trial	Psychiatric patients with psychosis and agitation	The agitation level using the BARS tool before and four	Convergent validity was moderate and significant ($p<0.05$) correlation coefficients	2A

	convergent and divergent validity using the Clinical Global Impression Severity Scale (CGI-S) and the Positive and Negative Syndrome Scale (PANSS) agitation items.		(N=117) studied at baseline and after treatment	hours after treatment with Ziprasidone.	with baseline BARS (0.32 & 0.40) to baseline PANSS agitation scores ($p<0.001$). Baseline BARS with baseline CGI-S showed moderate correlation coefficients (0.43 & 0.45; p,0.001). The results for divergent validity were a baseline BARS score of 0.18 and 0.22 with baseline PANSS negative component. The results for discriminant validity for baseline BARS in Study 1 (4.73) and 2 (4.99) were higher when compared to Study 3 (4.02). There were statistically significant differences in the mean score of BARS before and after treatment with Ziprasidone 2mg to 10mg between study groups not seen with other scales. The results for inter and intra rater	

					reliability were 0.998 for the first rating, and 0.999 for the second rating in Study 1. The overall intra-rater reliability was 0.999. In Study 2, the results were 0.999 and 1.0. Researchers concluded that the BARS tool is a psychometric ally valid, sensitive, and reliable scale for measuring behavioral activity in agitated patients with psychosis.	
Warren et al., 2016	To evaluate factors associated with prolonged emergency department (ED) length of stay (LOS) among psychiatric patients. To develop a multivariable predictive model to guide future	Observational cohort study with a review of the electronic health record of psychiatric patients from 2010-2013 to evaluate an extended	ED psychiatric visits (N=9247) of psychiatric patients (n=6335) from 2010-2013.	Logistic regression model and odds ratio was used to analyze categorical data. A multivariate model was developed to analyze extracted data. Model calibration was determines using Hosmer and Lemeshow goodness-of-fit test.	The chart review revealed 9247 visits among the 6335 patients; median LOS was 4.1 hours, with 1424 visits (15%) with prolonged LOS. In the multivariable model, characteristics associated with an increased risk of a prolonged LOS included patient age 12	4B

	interventions in reducing ED LOS.	LOS (>8 hours).		Statistical analysis was conducted using SAS software.	to 17 years (odds ratio [OR], 2.43; *P* < .001) or ≥ 65 years (OR, 1.46; *P* = .007); male gender (OR, 1.24; *P* = .002); Medicare insurance coverage (OR, 1.34; *P* = .008); use of restraints (OR, 2.25; *P* = .006); diagnoses of cognitive disorder (OR, 4.62; *P* < .001) or personality disorder (OR, 3.45; *P* < .001); transfer to an unaffiliated psychiatric hospital (OR, 22.82; *P* < .001); ED arrival from 11 pm through 6:59 am (OR, 1.53; *P* < .001) or on a Sunday (OR, 1.76; *P* < .001); or ED evaluation in February (OR, 1.59; *P* = .006), April (OR, 1.66; *P* = .002), and May (OR, 1.54; *P* = .007).	

Weiss et al; (2012)	To identify management factors that related to emergency department (ED) length of stay for psychiatric patients.	Prospective Study	Mental health patients treated at one of 5 EDs between June 2008 and May 2009 (N=1095).	Measurement of clinical time logs and regression analysis of medical records.	The mean LOS was 11.5 hours. The use of 1:1 observers or restraints had a significant effect on prolonging overall ED length of stay. Patients requiring 1:1 observers (without restraints) had ED stays 1.8 hours longer on average, whereas those requiring restraint had stays 4.2 hours longer compared with patients not requiring either intervention.	4B
Zeller & Citrome, 2016	The aim was to increase awareness of best practices for the management of agitation in the ED, and to consider the role of new pharmacologic interventions for patients with agitation associated	Narrative review based on information from Best practices in Evaluation and Treatment of Agitation (BETA) guidelines	Review of (N=34) guidelines and research studies on the management of agitation.	Hand search of articles on the best practices on management of agitation.	BARS is a simple tool to use. Restraining patients can result in additional resource use and a longer time spent in the ED. In a prospective evaluation of over 1,000 adults treated in the ED, use of restraint resulted in patients spending an additional 4.2 hours in	5B

	with bipolar disorder or schizophrenia.	with the inclusion of data on new pharmacologic interventions			the ED compared with those not requiring restraint. Early and excessively aggressive pharmacologic intervention can mask underlying conditions, delaying and impeding accurate diagnosis. Delays in medication use can allow the agitation to escalate, putting the patient, staff, and others at increased risk of harm. It is important to address the agitated behavior rapidly and efficiently to ensure the safety of patient and staff.	
Zun & Downey, 2008	To determine the level of psychiatric patient agitation in the emergency department and to determine if the level of agitation changed when the patient was restrained or unrestrained.	Observational Study	Psychiatric ED patients (n=100)	Agitation level was rated using the Agitated Behavior Scale (ABS) and the RASS.	On arrival to the ED, two of the 47 restrained patients were rated as severely agitated using the ABS, and 13 or 47 were rated as combative on the RASS demonstrating a statistical difference between groups (p=0.01)..	6B

					Scores on the agitation scales decreased over time in both groups.	

Appendix B

DNP Project MAP-IT Plan

DNP Project Name: Improving Early Detection of Patient Agitation

DNP Project Purpose Statement: To implement the BARS tool in the ED for early detection of agitation leading to early intervention and prevention of restraints and violence.

Short-Term SMART Objective: *By (month) September (day) 22 (year) 2018:*

1. *BARS tool integrated in to the EHR by week 1 (September 15, 2018)*
2. *Superusers will be on unit during go live phase of BARS implementation at the beginning of week (September 16, 2018)*
3. *Nurses will use the BARS tool with >50% compliance by the end of week 1 (September 22, 2018)*
4. *Nurses will use BARS tool correctly by the end of week 1 (September 22, 2018)*

Long-Term SMART Objective: *By (month) December (day) 15 (year) 2018:*

1. *BARS tool used with 100% compliance*
2. *Improve management of patient agitation through early detection, leading to reduced restraint use and reduced violence.*

Population/Context: Mental health patients in the emergency department

Mobilize:

List of Core Team Members – Core team members to facilitate the changes in practice include:

1. Nurse informaticists and information service (IS) solutions development analysist who will build the BARS in the EMR
2. The ED IS nurse liaison who will assist in the development of the BARS format to meet the needs of the ED
3. Eight ED nurse superusers who will help to train the nurses on the BARS tool during the go live phase of the project
4. The ED nurse educator who will help facilitate the education of the BARS for the ED nurses in the ED online learning platform
5. The ED nurse clinical leader who review the mental health patient charts to assist in retrieval of data related to the use of the BARS tool, restraint use, and interventions associated with agitation ratings on the BARS tool
6. ED charge nurses who will facilitate the use of the BARS by reminding nurses to use the tool during pre-shift huddles.

Assess:

1. The structures that need to change is the Emergency Department Management (EDM) of the EMR. The EDM will change to include the BARS tool as an automated required assessment for any patient who presents to the ED with a psychiatric complaint. The EDM will also change to include the BARS as an optional add-in assessment for non-psychiatric identified patients who suddenly develop agitation.

2. The processes that will change will be that nurses will be using the BARS tool to assess every psychiatric patient who presents to the ED. This will be a new required assessment. The nurses will rate the patient's agitation level using the BARS and will document the intervention used to mitigate the agitation.

3. To measure progress, chart audits will be conducted to determine the nurse's compliance with using the BARS tool. The chart audits will also include an analysis of the interventions documented by the nurse to mitigate the agitation. A before and after BARS score will be analyzed to determine if the nurses selected intervention was successful in decreasing the agitation level.

Plan:

HOW	WHEN
1. Online module will be created to introduce the BARS to nurses prior to the Go Live phase.	1.1 June 2018
2. Online module available in MyLearning for nurses	2.1 August 1, 2018
3. Charge nurse to introduce and remind nurses of the BARS in huddles at 0700 and 1900 huddles during the *Go Live* phase	3.1 August 1, 2018
4. 1-hour superuser (8) training on the use of the BARS tool	4.1 August 30, 2018
5. The nurses will complete the online module by a designated due date	5.1 September 1, 2018
6. (4) 4- hour open sessions on the unit with BARS practice scenarios with interventions on the unit	6.1 September 1, 2018

7. BARS *Go Live* for nurses to begin using the tool with patients	7.1 September 17, 2018
7. Collect data: Data will be collected during the project implementation phase: 1. Weekly: The nurse's compliance with using the BARS tool for every BH patient. 2. Weekly: The nurses selected interventions for agitation levels. 3. Weekly: Before and after BARS scores will be collected to determine the effectiveness of the nurse's intervention for agitation. 4. Monthly: Data will be collected monthly for restraint use. 5. The SUS will be administered to nurses to determine the usability of the BARS.	7.1, 7.2, 7.3 Collection dates: • September: 22, 29 • October: 6, 13, 20, 27 • November: 3, 10, 17, 24 • December: 1, 8, 15 7.4 Collection dates: • September 29 • October 27 • November 24 • December 15 7.5 Collection date: • December 15

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Implement:

Step 1: Small Steps

- BARS integrated into the EDM.
- Nurses are educated on the BARS with emphasis on how it will help to mitigate agitation leading to potential violence and restraint use.
- ED Nurses are trained and supported on the use of BARS by superusers.
- Nurses are encouraged and reminded to use the BARS during huddles.
- Superusers support nurses during Go Live phase

Step 2: Full-scale implementation

- The project will be overseen by the DNP student. The BARS tool will be introduced to nurses through education online and then hands-on in the ED before it is used on actual patients. There will be superusers who will aid in the education and support of the nurses before and during the Go Live phase of the project. The DNP student will work with the ED clinical leader who tracks data on mental health ED patient's charts to collect and analyze data related to the use of the BARs in the ED. The analyzed data will be used to implement changes to the BARS in the ED to meet the outcomes of reduced restraint use and violence in the ED. Nurse surveys and the SUS will be collected and analyzed to improve the use of the BARS to meeting the intended

outcomes. Desired changes will be made after the initial implementation period and analysis of the data.

Track:

Chart audits will be analyzed for use of the BARS tool correctly. Nurses will be surveyed regarding their use of the BARS and any difficulty or barriers to the use of the tool. The System Usability Scale (SUS) will be administered to nurses to rate the usability of the BARS in the EMR. This information will be analyzed to improve the use of the BARS and outcomes. The chart audits will include a review of restraint use and whether the BARS tool was used to assess agitation for patients placed in restraints. This will help to determine if interventions were successful, if the BARS was useful in detecting agitation, and if the nurses chose appropriate non-pharmacological interventions for agitation management (such as de-escalation techniques and/or diversional activities). This data can be used to re-educate the nurses if the appropriate interventions were not selected, and in methods to better manage patient agitation. Through tracking the use of the BARS tool during chart audits, this quality improvement project will be revised to improve the continued use of the BARS tool for sustainability.

Date: __4/28/18__ Re-Assessment Date 1: __10/15/18__ Re-Assessment Date 2: 12/15/18__

Plan Developed by (List all contributors): _Tabitha Legambi, MSN RN, DNP Student; Mary Zaleski, DNP RN, ED Educator; Caitriona Massengale, RN, ED IS liaison, Warren Griffith, RN IS Solutions Development Analyst; Joyce Harps, MSN, RN, Clinical Nurse Specialist, Practice Council.

Reference: Guidry, M., Vischi, T., Han, R., & Passons, O. MAP-IT: a guide to using healthy people 2020 in your community. U.S. Department of Health and Human Services. The Office of Disease Prevention and Health Promotion, Washington, D.C. https://www.healthypeople.gov/2020/tools-and-resources/Program-Planning

Appendix C

Project Proposal Summary

The project proposal summary will provide an overview of a quality improvement project. The overview for the quality improvement project of the implementation of the Behavioral Activity Rating Scale (BARS) in an urban ED for the management of agitated patients will include the background of the problem, purpose of the project with supporting evidence, description of the implementation plan, data collection and analysis plan, and measures to project human subjects.

Background

Mental health (BH) patients experience an extended length of stay (LOS) in the emergency department (ED) that can lead to agitation (Emergency Nurses Association, 2014; Nicks & Manthey, 2012). When patients become agitated, violence can occur, and the use of restraints increases. This increases the risk for injury to patients and staff (Gottlieb, Long, & Koyfman, 2018). Staff in the ED need tools to objectively assess and manage the care of agitated patients (ACEP, 2014; Lau et al., 2012; Manton, 2013; Zeller & Citrome, 2016).

Purpose and Supporting Evidence

The purpose of this DNP project is to implement the Behavioral Activity Rating Scale (BARS) tool in the EMR of an urban ED in Baltimore to provide nurses with a validated tool to measure patient agitation. The BARS is a valid and reliable tool to detect patient agitation (Swift, Harrigan, Cappelleri, Kramer, & Chandler, 2002; Pfizer, 2001). BARS has been studied in the ED and found to be easy to use by nurses, and helpful in the detection and management of patient agitation (Simpson, Pidgeon, & Nordstrom, 2017; Schumacher, Gleason, Holloman, & McLeod, 2010).

Implementation Plan

The BARS tool will be introduced to nurses through online education with hands-on application through scenarios before it is used on actual patients. Trained superusers will educate and support the nurses before and during the Go Live phase of the project. Nurses will begin using the BARS tool for patients who present to the ED with a mental health complaint.

Data Collection and Analysis

Data from retrospective chart reviews will be conducted to include the nurses use of the BARS tool, interventions associated with the scores on the BARS, restraint use in the ED, and episodes of patient violence indicated on the BARS report. This data will be used to analyze the project and determine the BARS usability towards the intended goals and outcomes of the project. All collected data will be deidentified. Collected data will be protected in a password protected computer file. The System Usability Scale (SUS) will be used to determine the usability of the BARS tools by nurses.

Human Subject Protection

The Institutional Review Board (IRB) for the DNP student's university and the designated hospital will review the project to ensure human rights protection. A quality

improvement determination form will be completed at the designated hospital for determination of a quality improvement project from a human subject research study.

Appendix D

Table 2. Implementation Plan for Training Superusers.

Learning Objectives	Content Outline	Method of Instruction	Time Spent	Method of Evaluation
1. Define the BARS tool and the purpose of using the tool in the emergency department. 2.Explain which patients meet the criteria for the BARS screening tool.	Group Discussion	Lecture/discussion	15 minutes	Repeat demonstration Champion nurse correctly identifies patients who need to be screened using the BARS tool
3. Apply the use of the BARS tool to a patient scenario	1. Video Case Scenario for agitated patient 2. BARS tool for each nurse to score patient 3. Group Discussion	Group Case Scenarios	15 minutes	Champion correctly identifies the patients agitation level.
4. Plan interventions for patients based upon the patients BARS score. 5. Evaluate the effective of selected interventions using a post intervention BARS score.	1. Agitation interventions chosen 2. Video Case Scenario for agitated patient post intervention 3. BAR tool for each nurse to score patient 4. Group Discussion	Group Case Scenarios	30 minutes	Champion nurse correctly identify appropriate interventions for agitation level.

Appendix E

BARS Training Scenarios

Scenario 1

A 28-year-old man brought in by police for running around and screaming in a gas station parking lot. The patient was not making sense and was scaring people. He appeared paranoid and delusional. His sister arrives and reports that he had just moved to town and was off his meds. The patient is 5'11", 230 lbs. Upon arrival in the ED, the patient sits down briefly. Vital signs are stable and reports no medical history. The patient tells the triage nurse he was previously on a Haldol injection, but said, "I hate how it makes me feel."

Pause for discussion of BARS score and intervention

The patient then stands up abruptly and states loudly, "I know you're trying to kill me." The patient begins pacing back and forth. Five minutes after the triage interview, he stands in the middle of a busy waiting room, puts his head back and roars like a lion.

Pause for discussion of BARS score and intervention evaluation with BARS score

The patient is now placed in the ED Safe Area. When the nurse enters the patient becomes labile in the interview with mood changes from angry, friendly, to fearful. The patient has a sudden flight of ideas and reports that the government is trying to kill him. He insists on smoking a cigarette. The patient continues to escalate and suddenly stands up and stares at the nurse with his fists clenched.

Pause for discussion of BARS score and intervention

Scenario 2

48-year-old male arrives to the emergency department for detox from alcohol. The patient reports that he last drank a fifth of vodka last night. When you tell him that he will need to wait to see the doctor he suddenly stands up from the stretcher, cocks his fists, and says "I am so sick of having to wait to get help!"

Pause for discussion of BARS score and intervention

With proper de-escalation techniques, the patient is calmed and returns to his bed. He begins crying and says he is sorry for yelling. He says that he is just really tired of trying to get "clean" and can't seem to get it right.

Pause for discussion of BARS score and intervention evaluation with BARS score

Scenario 3

A 30-year-old male presents to the Emergency Department with severe pain in the right eye. At triage he is loud and obnoxious and occasionally uses offensive language.

Pause for discussion of BARS score and intervention evaluation with BARS score

The security officer tells him that if he cannot act "civil," he will not be treated. This seems to calm the patient where he stops yelling and he is cooperative while getting his vital signs taken. During vital signs assessment, the vital signs technician asks the patient, what happened to his eye, the patient becomes increasingly agitated and yells "I am so sick of people asking me that!"

Pause for discussion of BARS score and intervention evaluation with BARS score

Once the patient is in the Safe Area of the ED he is observed pacing in the hallways and complaining of his eye hurting. He goes back into the waiting room and asks for assistance from the triage nurse because "things are not moving fast enough." Over the course of 2 hours, the patient becomes progressively more agitated and begins throwing chairs in the emergency department.

Pause for discussion of BARS score and intervention evaluation with BARS score

Scenario 4: Video Case Study

Appendix F

Nurse Training Worksheet: Behavioral Activity Rating Scale (BARS) Tool for the Emergency Department

BARS tool defined:

Which patient's in the emergency department require the BARS tool screening?

Can any patient be screened using the BARS tool? Explain your answer.

What are the interventions for patient agitation?

Case Scenarios Worksheet: Rate the patients agitation level using the BARS tool. Select appropriate interventions and evaluate the effectiveness of the intervention.

Patient Behaviors	BARS Score	Interventions	Post-intervention BARS Score
Scenario 1			
Scenario 2			
Scenario 3			
Scenario 4: Video			

The Behavioral Activity Rating Scale

7=	Violent, requires restraint
6=	Extremely or continuously active, not requiring restraints
5=	Signs of over (physical or verbal) activity, calms down with instruction
4=	Quiet and awake (normal level of activity)
3=	Drowsy, appears sedated
2=	Asleep but responds normally to verbal or physical contact
1=	Difficult or unable to rouse

Appendix G

System Usability Scale

	Strongly disagree				Strongly agree
1. I think that I would like to use this system frequently	1	2	3	4	5
2. I found the system unnecessarily complex	1	2	3	4	5
3. I thought the system was easy to use	1	2	3	4	5
4. I think that I would need the support of a technical person to be able to use this system	1	2	3	4	5
5. I found the various functions in this system were well integrated	1	2	3	4	5
6. I thought there was too much inconsistency in this system	1	2	3	4	5
7. I would imagine that most people would learn to use this system very quickly	1	2	3	4	5
8. I found the system very cumbersome to use	1	2	3	4	5
9. I felt very confident using the system	1	2	3	4	5
10. I needed to learn a lot of things before I could get going with this system	1	2	3	4	5

Using SUS

The SU scale is generally used after the respondent has had an opportunity to use the system being evaluated, but before any debriefing or discussion takes place. Respondents should be asked to record their immediate response to each item, rather than thinking about items for a long time.

All items should be checked. If a respondent feels that they cannot respond to a particular item, they should mark the centre point of the scale.

Scoring SUS

SUS yields a single number representing a composite measure of the overall usability of the system being studied. Note that scores for individual items are not meaningful on their own.

To calculate the SUS score, first sum the score contributions from each item. Each item's score contribution will range from 0 to 4. For items 1,3,5,7, and 9 the score contribution is the scale position minus 1. For items 2,4,6,8 and 10, the contribution is 5 minus the scale position. Multiply the sum of the scores by 2.5 to obtain the overall value of SU.

SUS scores have a range of 0 to 100.

Appendix H

Table 2

Nurse Documentation Compliance of the BARS

Documentation of BARS	n	%
BARS Documented Q2 Hours	513	65.77
BARS Documented Frequently Q2 Hours with only 1-2 major delays	96	12.31
BARS Documented only Once	158	20.26
BARS Documentation with major delays for each assessment	13	1.67
Totals	780	100

Note. Major delays defined as >4 hours between documentation

Appendix I

Table 1

Patient Chief Complaints Documented with the BARS

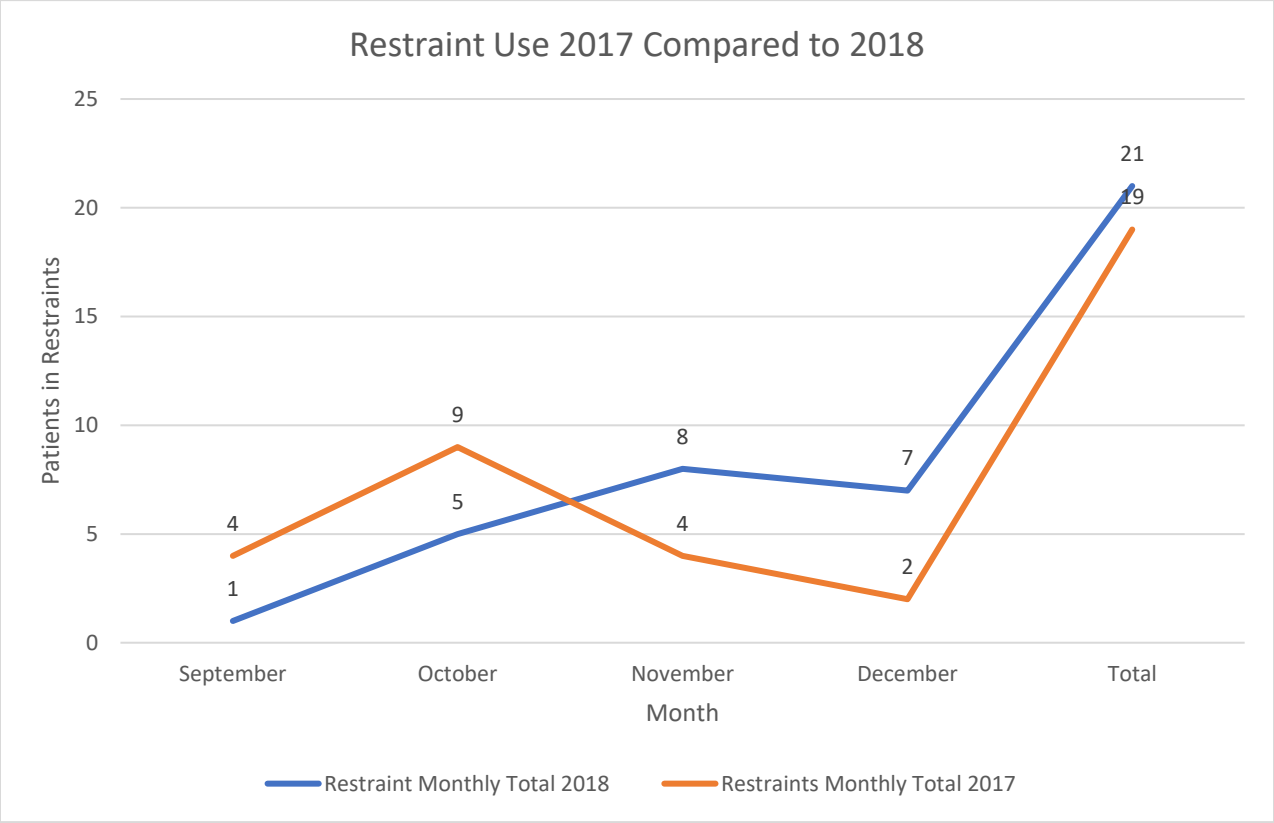
Chief Complaint (C.C.)	n	%
Automatic Chart Assessment Based on Behavioral Health Chief Complaint		
Altered Mental Status	260	33.33%
Alcohol Ingestion	69	8.85%
Alcohol Withdrawal	27	3.46%
Suicidal Ideation	128	16.41%
Wants Detox	25	3.21%
Feels Anxious	35	4.49%
Homicidal Ideation	8	1.03%
Psychosocial Other	20	2.56%
Auditory Hallucinations	13	1.67%
Visual Hallucinations	1	0.13%
Aggressive Behavior	9	1.15%
Overdose	104	13.33%
To be Evaluated	27	3.46%
Drug Ingestion	15	1.92%
Depressed	11	1.41%
Out of Medications	1	0.13%
BARS Added in the Non-Behavioral Health Patient Chart by the Nurse		
Motor Vehicle Crash	1	0.13%
Abscess	1	0.13%
Chest Pain	7	0.90%
Headache	1	0.13%
Vaginal Bleeding	1	0.13%
Shortness of Breath	2	0.26%
Weak	1	0.13%
Cardiac Other	1	0.13%
Assault	1	0.13%
Rectal Bleeding	1	0.13%
Vomiting	2	0.26%
Back Pain	1	0.13%
Unresponsive/Unconscious	2	0.26%
Nausea	1	0.13%
Environmental Exposure	1	0.13%
Foot Pain	1	0.13%
Extremity Swelling	1	0.13%
Abdominal Pain	1	0.13%
Total	780	100%

Note. BARS added to the non-behavioral health chief complaint charts due to history of violence or sudden onset of agitation

Appendix J

Figure 1

Line Graph Comparison of Restraint Use Before and After BARS



Appendix K

Table 5

Restraint Data Comparison Pre and Post BARS Implementation

	n	Mean (SD)	p-value
Restraint Use			
September 17th -December 17th 2017	19	4.75 (2.99)	0.71
September 17th -December 17th 2018	21	5.25 (3.10)	
Days in Restraints			
September 17th -December 17th 2017	32	1.68 (1.20)	0.04
September 17th -December 17th 2018	24	1.14 (0.69)	

Note. Restraint use indicates total number of patients restrained. Days in restraints indicates the total number of days that patients who were restrained remained restrained.

Appendix L

Table 3

Demographics for Surveyed ED Nurses (N=25)

		N	%
Age (years)			
	<25	3	12
	25-35	15	60
	36-45	6	24
	46-55	1	4
Level of Nursing Education			
	Associates Degree	11	44
	Bachelor's degree	12	48
	Master's degree	2	8
Nursing Experience (years)			
	<2	6	24
	3-5	11	44
	6-10	4	16
	11-15	2	8
	16-20	0	
	21-30	1	4

Appendix M

Table 4

RN Survey of Unit Safety with the BARS Assessment

N	**25**					
Safety Questions	Yes (N)	%	No (N)	%	Unsure (N)	**%**
1. Do you feel as though the BARS helps you to better detect and manage behavioural health patients?	13	52.00	6	24.00	6	24.00
2. Do you feel the unit is safer since implementation of the BARS tool in the emergency department with behavioural health patients?	7	28.00	7	28.00	11	44.00
3. Does having the BARS turn red help to remind you to complete the BARS?	24	96.00	1	4.00	0	0.00%

Note. Five surveys did not have the Unit Safety questions answered.