Implementing Behavioral Optimization and Outcomes Support Team in a Medical/Surgical Telemetry Unit

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Abstract

Problem: A community hospital reported about 21 staff assaults with injuries and 242 emergency response code green (CG) calls for violent behaviors resulting in lost time in the 2022 fiscal year. Evidence has shown that exposure to violent behaviors can compromise effective patient care and cause psychological distress, job dissatisfaction, high turnover, and higher healthcare costs. **Purpose:** The purpose of this quality improvement project was to develop and implement a behavioral optimization and outcome support team (BOOST) in a medical-surgical telemetry unit (MSTU) to reduce patient-to-staff assaults/injuries. **Methods:** The BOOST was piloted on the MSTU from October 2022 to January 2023. The process data includes staff knowledge and satisfaction with BOOST obtained with a pre-and post-implementation survey. The outcome data includes the number of BOOST calls, the number of CG calls, and the number of staff assaults/injuries. The BOOST is activated when a patient exhibits non-violent behaviors, and the team provides de-escalation and support. Data were collected weekly and analyzed using a run chart. **Results:** Twenty-six BOOST and 15 CG calls were activated during the 15 weeks of BOOST implementation. From week 4 to week 8, there was 100% BOOST call utilization in the MSTU. Survey data demonstrated an increase in knowledge of the behavioral response team among nursing staff. Staff respondents reported satisfaction with BOOST implementation, and they felt supported by the team. There were no staff injuries or assaults reported during BOOST implementation. **Conclusion:** BOOST calls were effective in the de-escalation of the patient and the team provided support to the nursing staff. BOOST utilization can effectively reduce assault and injuries in the workplace. Hospital spread and sustainability of BOOST should address the lack of BOOST knowledge among new nurses and staffing challenges in the behavioral unit.

Keywords: behavioral emergency response team, workplace violence, nursing staff

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Problem Description

Workplace violence (WPV) is an ongoing problem in the healthcare setting with nurses facing the majority of threats and assaults coming from patients with behavioral issues. The rate of WPV is four times greater in healthcare facilities than in private industries, posing harm to the emotional well-being of the staff, patient, family, and the community at large (Maryland Hospital Association, 2022). About 97% of nurses have been reported to encounter violent behaviors from patients annually with most of the violent events occurring in medical inpatient settings (Dahnke & Mulkey, 2021). The nursing staff has an increased risk of WPV due to the nature of their job and proximity to patients. Exposure to WPV can compromise effective patient care and lead to psychological distress, job dissatisfaction, absenteeism, high turnover, and higher costs of care (TJC, 2021). Moreover, behavioral problems in medical patients are associated with a longer length of stay, increased hospital costs, patient injuries, nosocomial infections, and increased restraint use (Choi, 2019).

In 2016, the estimated healthcare cost associated with violence in healthcare was $2.7 billion with $429 million in medical care, staffing, indemnity, and other costs resulting from violence against hospital employees (American Hospital Association, 2018). The direct and indirect costs of violence in the workplace have drawn the attention of The Joint Commission which requires all hospitals to have an intervention for WPV investigation, monitoring, and reporting as part of their accreditation requirements (TJC, 2021). In the 2022 fiscal year, a local community hospital with 224 inpatient beds experienced an increase in workplace violence against its nursing staff. The hospital reported about 21 staff assaults with injuries and 242

emergency response calls for violent behaviors resulting in lost time at work in its medical-surgical telemetry unit (MSTU).

The aim of the quality improvement (QI) project was to develop and implement a behavioral optimization and outcomes support team (BOOST) in the medical-surgical telemetry unit (MSTU) as an initiative to reduce patient-to-staff assaults/injuries. The BOOST is comprised of trained professionals who intervene during potential or actual behavioral emergencies. BOOST focuses on promoting safety by protecting patients and staff during potential and actual occurrences of aggressive or violent incidents.

Available Knowledge

Published evidence showed that behavioral response teams created a safer environment, prepared caregivers to interact with challenging patients, and lead to decreased length of hospital stay, and fewer assaults (Afriyie-Boateng, 2019). Following a comprehensive evidence review, BOOST was found to be an evidence-based intervention aimed at proactively addressing behavioral challenges in healthcare settings (Zicko et al., 2017). The implementation of a behavioral response team with evidence-based models reduces security calls, restraint usage, and staff injuries along with moderate improvement in staff knowledge and self-efficacy (Choi et al., 2019). A study by Zicko et al. (2017) reported a significant increase in staff knowledge and support after behavioral response team implementation ($p < .05$) with a reduction in the number of staff assaults by 83% post-5-month pilot phase. Lakatos et al. (2019) evaluated SAFE (spot a threat, assess the risk, formulate a plan, and evaluate the outcome) intervention utilizing education and training on de-escalation techniques and reported a 40% decrease in nursing staff injury rates. Other studies utilized behavioral interventions (Arnetz et al., 2017; Afriyie-Boateng et al., 2018; Lamont & Brunero, 2018; Adams et al., 2017) with a reported reduction in

workplace injury and improved safety for patients and staff. Tables 1 and 2 provide a detailed evidence review and synthesis of studies that implemented evidenced-based interventions for violence prevention in acute care settings. The level and quality of evidence were evaluated using John Hopkins nursing evidence-based practice (JHNEBP) (Dang et al., 2022).

Rationale

The Iowa Model of Evidence-Based Practice for implementation (IMEBP) framework shown in Figure 1 was utilized in the implementation of BOOST with permission letter shown in Appendix D. The IMEBP was developed and tested by nurses and faculty at the University of Iowa Hospital (Iowa Model Collaborative, 2017). IMEBP has been widely utilized in behavioral response interventions and documented to be helpful in the translation of research findings into clinical practice (Choi et al., 2019; Zicko et al., 2017). The IMEBP is suitable for BOOST implementation as it guides decision-making starting from problem identification, priority establishment, evidence search, evidence appraisal, and evaluation of an evidence-based intervention that elicits practice change. The IMEBP flowchart provided a guide on BOOST implementation from clinical problem identification, project purpose, evidence appraisal, project design, sustaining practice change, and results dissemination. The key step in the IMEBP is the determination of the priority of the problem to the organization, department, or unit. Workplace violence interventions are clinical issues as well as a regulatory requirement by The Joint Commission (TJC). IMEBP framework provides step-by-step implementation guidelines for securing organizational buy-in, leadership, administrative support, and the establishment of the team members who will develop, evaluate, and implement the EBP intervention. The IMEBP highlighted the importance of piloting the intervention in one unit based on agency resources and limitations before implementing it in the whole organization. The model emphasized hardwiring

change into the system through personnel engagement to promote and sustain the practice change.

Methods

Context

The BOOST QI project was implemented at a large community hospital on a 42-bed inpatient MSTU. The unit has about 62 nurses who were the targeted sample for the QI project. The BOOST team discussed the current protocol of behavioral emergency management and the proposed process shown in Figures 2 and 3. Through the review of CG (behavioral calls that involve security personnel) utilization in the organization, it was determined that the two highest CG utilizers with higher staff assaults and injuries were the emergency department (ED) and the MSTU. The ED was excluded as a pilot unit due to staffing issues and the MSTU was chosen as the pilot unit for BOOST. Staff buy-in and cooperation were promoted through the communication of the BOOST implementation plan in the shift huddle, bulletin board, and staff education. The identified barriers to BOOST included the lack of buy-in from the staff on the pilot unit, inadequate staffing due to ongoing staff shortages in the organization, lack of knowledge of BOOST, and difficulty adapting to changes. These barriers were addressed through staff education, feedback, and frequent monitoring of the BOOST process. Reinforcement on proactive patient assessment to identify early warning signs to facilitate early interventions was provided to nursing staff.

Intervention

The Expert Recommendations for Implementing Change (ERIC) model in Table 6 were utilized in developing the implementation strategies and tactics for the project (Powell et al., 2015). The QI project was implemented on the pilot unit for 15 weeks from October 4, 2022, to

January 10, 2023. BOOST implementation procedure included a pre-implementation survey, nursing education, BOOST Go-Live, and post-implementation survey. The BOOST education was conducted for 3 weeks from September 7, 2022, to October 4th, 2022. All the nurses in the MSTU received an invitation to complete BOOST education through the hospital's online learning platform. Nursing staff in MSTU units were informed about BOOST through education, emails, flyers, rounds/huddles, and staff meetings. The BOOST team attended nursing unit rounds/huddles to speak to nursing staff about BOOST and answered their questions. Brochures were posted on the units to inform all staff about the QI project.

The quality improvement project lead (QIPL), unit manager, and unit educators took part in marketing BOOST. BOOST response team members included a psychiatric registered nurse (RN), a nursing supervisor, and a security officer. BOOST calls were activated by the primary RN when a patient exhibited non-violent behaviors such as angry gestures, pacing, irritability, yelling, agitation, and refusal of care as shown in the proposed process in Figure 3. The psychiatric RN assessed, de-escalated, and addressed the root cause of the behavioral issue and documented the event in the electronic medical record; security stayed on standby for non-contained behavioral issues, and the nursing supervisor provided support to the staff and patients and assisted in care coordination. CG was activated when de-escalation was unsuccessful, or the patient became a danger to themself or others. All the responders participated in debriefing after the situation was contained. The unit nurse manager was tasked with reminding nursing staff of the importance of post-huddle debriefing after each BOOST call.

Measures

The process measure included staff knowledge of BOOST and staff satisfaction with BOOST with a goal of a 100% increase in BOOST knowledge and 100% satisfaction with

BOOST among nursing staff. The rationale for the process measures included validation of staff knowledge of BOOST and the determination of satisfaction with the support provided by BOOST implementation. The outcome measures included the number of BOOST calls, the number of CG calls, and the number of staff assaults/injuries. The outcome goals included a 25% decrease in CG calls for behavioral issues in the first year of BOOST implementation, a 50% utilization of BOOST calls for behavioral issues in the first year of BOOST implementation, and a 25% decrease in the number of patients to staff assault/injuries. The rationale for the outcome measures was to monitor the BOOST adoption and utilization for behavioral issues.

Study of the Intervention

The methodology chosen to study the impact of BOOST intervention included a staff survey and BOOST alert through the hospital paging system. Staff knowledge of BOOST was measured using a pre-implementation survey developed by members of the BOOST (Appendix A) and staff satisfaction was measured with a post-implementation survey developed by BOOST team members (Appendix B). The pre-implementation survey was completed electronically by the nursing staff on the pilot unit via REDCap. The completion of the survey was facilitated by QIPL through REDCap on three different dates to capture nurses that worked different shifts. The survey was monitored and tracked by the QIPL to ensure the accuracy and reliability of data.

The impact of BOOST intervention on the pilot unit was assessed using the process and outcome measures shown in Table 3. The number of BOOST and CG were collected daily through the hospital paging system alert to the QIPL email and phone. The data was recorded weekly into REDCap by the QIPL. The hospital paging system data are time-stamped with the date, time, and location of the BOOST alert to maintain data accuracy. The chief of security and other members of the BOOST team received the daily BOOST and CG alerts. The chief of

security printed out the BOOST weekly report and shared it with the BOOST team to compare data, cases, and reports. The weekly data comparison enabled the accuracy and consistency of the recorded data by the members of the BOOST team. The number of staff assaults/injuries before and after BOOST was recorded by the chief of security.

Analysis

The pre-and post-implementation survey data was collected using a Likert scale and displayed in a bar chart shown in Tables 4 and 5. The percentage of nurses that were knowledgeable and satisfied with BOOST was analyzed. The number of BOOST and CG calls over the 15 weeks of the project implementation was analyzed using a run chart to assess for a common cause or special cause variability in the data set. Data were entered weekly on a run chart to examine trends, runs, and shifts. The number of staff assaults/injuries before and after BOOST implementation was measured by comparing the total percentages.

Ethical Considerations

The site approval as well as the non-human subject's research determination from the human research protection office of the University of Maryland School of Medicine institutional review board were obtained before project implementation. The QIPL completed training on confidentiality and privacy before project initiation. To protect patient and staff confidentiality, survey data were collected in a private area and stored in REDCap which is a secure, password-protected server accessible only to the QIPL and faculty advisor. Staff respondents were assigned a number based on their initials which were recorded in a spreadsheet, stored on a password-protected USB drive (UD), locked in a unit cabinet accessible to the clinical site representative (CSR), and has been destroyed to protect staff confidentiality.

Results

Thirty-one (50%) of eligible nurses completed the pre-and post-implementation BOOST survey. The number of staff that reported fair/no knowledge of BOOST was 52% in the pre-implementation survey and 6% in the post-implementation survey. The number that reported good/excellent knowledge of BOOST was 23% in the pre-implementation survey and 58% in the post-implementation survey (Tables 4 and 5). Staff respondents reported satisfaction with BOOST implementation in the post-implementation survey. Sixty-eight percent of the respondents reported satisfaction with BOOST, 29% reported neutral satisfaction and 3% reported not being satisfied with BOOST. Most of the unsatisfied and neutral responses from the BOOST survey were from night shift staff who reported that BOOST had not been helpful at night due to the non-availability of psychiatric RN at night shift, lack of response when BOOST is called during the night shift, and response by only nursing supervisor and security who are not trained in de-escalation.

The pre-implementation survey results show that 52% of the respondents reported practicing as a nurse for five or more years and 50% reported having no confidence in taking care of a patient with behavioral issues. The survey report indicated that 87% of the respondents had experienced one or more episodes of violence in the past year, and 29% reported experiencing 5 or more episodes of violence in the past year. Eighty-seven percent of the respondents had activated one or more CG calls in the past year. Sixty-one percent had activated BOOST at least once in the past 4 months and 43% had activated CG in the past 4 months. Though staff reported satisfaction with BOOST, as well as pre-and post-implementation data showing an increase in BOOST knowledge, the QI project failed to the meet process goal of a 100% increase in BOOST knowledge and 100% satisfaction with BOOST.

During the 15 weeks of BOOST implementation, the MSTU activated 26 BOOST calls and 15 CG calls (Figures 4 and 5). All the BOOST calls resulted in successful patient de-escalation. The number of BOOST calls and CG calls were plotted on a run chart to examine trends, runs, and shifts. With 15 useful observations, the BOOST run chart showed 5 runs, with no shifts, or trends. CG run chart showed 3 runs, with no shift or trends. Week 4 to week 8 of the QI implementation showed a 100% increase in BOOST call utilization with 0% CG calls. The BOOST and CG run charts were superimposed to assess data patterns and determine the variability and comparison between both sets of data (figure 6). Week 10 of the superimposed run chart showed an increase in both calls with 56% of BOOST calls and 44% of CG calls. The data pattern was attributed to repeated calls on a demented patient who exhibited violent behaviors resulting in increased utilization of both BOOST and CG calls in that week. Two BOOST calls that were converted to CG calls were recognized as inappropriate BOOST that should have been a code green. One of the inappropriate BOOST calls was initiated by a staff nurse that was new to running charge and did not understand the process. To reduce inappropriate BOOST calls, the team created a BOOST visual tool (Appendix C) as a guide to help nursing staff in deciding BOOST utilization. The visual tool was posted on the bulletin board and outside the MSTU locker room for easy visualization.

The outcome goal of a 25% decrease in CG calls and 50% utilization of BOOST calls for behavioral issues in the first year of BOOST implementation was met. Out of the total BOOST and CG calls (41), 63% were BOOST calls and 37% were CGs. Without the implementation of the BOOST intervention, the pilot unit would have recorded a total of 41 code greens which requires more staff and security personnel. No data were generated on staff assaults/injury outcomes as the length of the QI projects was too short to observe any meaningful impact. Due

to the brevity of the QI project, the overall impact on the outcome goals cannot be fully assessed. The data trend can be monitored over time to effectively analyze the outcome measure as the intervention is extended to other units in the organization.

Discussion

BOOST implementation in the MSTU received administrative support which helped to facilitate every stage of the QI implementation from the review of evidence to the project evaluation. BOOST utilization impacted the number of CG calls on the MSTU as the unit had more BOOST than CG calls. Without BOOST implementation, the number of CGs, restraints usage, and security personnel responding to security calls would be higher with an increased economic impact on the organization. Additionally, BOOST implementation in the MSTU impacted the patients positively due to the report from nursing staff that some of the patients specifically requested time with the psychiatric liaison who provided de-escalation in the dayshift. Nursing staff who completed the BOOST survey reported satisfaction with the intervention and felt supported by the responding team. The report is consistent with a study finding that noted that staff who responded to the survey reported that access and support from the BOOST service enhanced their perception of safety at work (Afriyie-Boateng et al., 2019). BOOST intervention was reported to be effective in de-escalating aggressive patients in the MSTU. Zicko et al (2017) highlighted the effectiveness of early de-escalation of aggression as an important intervention to improve patient and staff safety. Overall, BOOST QI implementation in the MSTU reduced CG calls and security intervention within 15 weeks of the project. The report supported findings from Zicko et al (2017) that implemented a behavioral response team in an inpatient adult unit and reported its effectiveness in the reduction of CG calls and security intervention (Zicko et al., 2017).

Though nursing staff verbalized support by the BOOST responder, BOOST responders reported that the primary RN was leaving the room when the team members arrived, and they were not participating in the debriefing. The team emphasized that the primary RN should provide a situation, background, assessment, and recommendation (SBAR) report, stay in the room throughout BOOST and participate in the debriefing. The charge nurse has to collaborate with the primary nurse on how to manage the other patients during BOOST call to enable the primary to stay in the room while responders are with the patient.

Some of the limitations that impacted BOOST implementation include staffing issues in the behavioral units, lack of response when BOOST was called at night, and lack of BOOST education among new hires and contractual staff. The behavioral unit which is responsible for sending a psychiatric RN during BOOST has staffing challenges at night and was unable to respond to some of the BOOST calls at night. and the night shift may not have any responders due to staffing issues. The nursing supervisor and security were the only ones responding to BOOST during the night shift due to staffing issues. This can be draining and challenging for the supervisor who has to cover BOOST on those days when there is no psychiatric RN available along with the other hospital assignments. The avenues to provide support for both day and night shift staff were explored as ways to mitigate the lapse in staff response. The team concluded that having a dedicated BOOST nurse at the behavioral unit every night will help to address the staffing challenges on the night shift.

Conclusions

The implementation of BOOST was enabled by The Joint Commission's requirement of a workplace violence prevention strategy in place in the hospital by December 2021 as part of its regulatory process. There is a clear need for the continuation and establishment of the BOOST

from a healthcare safety, regulatory, and quality perspective. BOOST provides immediate response to a patient displaying disruptive behaviors that are not life-threatening. It promotes workplace safety by protecting patients and employees during potential and actual occurrences of aggressive or violent incidents. BOOST promotes patient and staff safety through early intervention using the least restrictive measures and reducing the need for restraints and seclusions.

The BOOST implementation team is working collaboratively with the hospital leadership on BOOST sustainability and spread to the other units in the hospital. BOOST has the potential to spread to other units but the issues and barriers in the pilot unit will need to be addressed such as staffing challenges, and lack of knowledge of BOOST among the new staff. Staff-identified challenges and issues will be addressed through education, evaluation, and feedback. The inclusion of BOOST information in the orientation packet and completion of the BOOST module before unit orientation will be the approach for new staff who are unaware of BOOST. Staff education and reinforcement of the importance of early assessment of the patient to detect the warning signs to maximize detection, and prompt intervention is very important. Violence against nurses has become a significant issue, and interventions like BOOST can be helpful and effective in supporting nursing staff and reducing assault and injuries in the workplace. The successful adoption and spread of BOOST will depend on organizational support, leadership involvement in leading the initiatives, and securing stakeholder buy-in by addressing all the challenges identified during BOOST implementation.

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Table I

Evidence Review Table

Citation: Adams, J., Knowles, A., Irons, G., Roddy, A., & Ashworth, J. (2017). Assessing the effectiveness of clinical education to reduce the frequency and recurrence of workplace violence. *The Australian Journal of Advanced Nursing, 34*(3), 6–15. https://search.informit.org/doi/10.3316/informit.946627915561528					**Using JHNEBP Level and Quality 11-A**
Purpose/ Hypothesis	**Type of Evidence Research Design**	**Sample – Population, Size, Setting**	**Intervention/Procedures**	**Primary Outcome/Measures**	**Results/Conclusions**
"The purpose of the study is to assess the effectiveness of clinical education to identify patients with a high risk for violence and to reduce the frequency of violent incidents."	**Design**: Quasi-Experimental Pre- and Post-study design with an educational intervention.	**Sampling Technique:** Convenience sampling **Setting:** Two teaching hospitals in Western Australia (adult medical units) **Population:** nurses, nursing assistants, and patient care assistants **Size:** 65 Nurses **Power analysis:** The study aimed for 66% completion; 77% completed the intervention. **Group Homogeneity:** No observable difference in gender, age, and work experience between staff participants.	**Intervention:** Participants received an education that focused on (assessment, planning, implementation, and post-incident) and completed a questionnaire before and after the education. Retrospective incident data and prospective data (6 months of each) were collected before and after the education intervention. **Intervention Fidelity** Staff knowledge, confidence, and perceived capability were assessed before and after the intervention. Educational content was the same for all focusing on assessment, planning, implementation, and post-incident debriefing.	**Dependent Variable**: Staff knowledge and confidence to prevent and manage violent and aggressive incidents. **Measurement of DV**: Measured using a questionnaire with content and face validity. Designed explicitly to evaluate education effectiveness. Test re-test reliability of knowledge gave a Pearson's r=0.986 and a combined score for the Likert scale questions to give a Pearson's r=0.96. Internal consistency with Cronbach's Alpha, with homogeneity, was demonstrated for the three questions relating to confidence (0.93) and two questions relating to capability (0.78).	**Statistical Results:** There was a significant increase in staff knowledge after the intervention (p=0.001, CI 0.256-0.542). There was a significant increase in staff utilization of verbal de-escalation (p=0.011) and a notable decrease in the frequency and recurrence of violent incidents. **Conclusions:** The study reported that staff education led to increased confidence, an increase in de-escalation, and decreased incidence of violence. Education training that provides de-escalation techniques can help increase nurses' confidence and decrease the occurrence of violent incidents in hospital settings.
Citation: Afriyie-Boateng, M., Loftus, C., Wiesenfeld, L., Hunter, M., & Lawson, A. (2019). Proactive Psychiatry Intervention Using a Nurse-Led Behavioral Response Model for Hospitalized Patients with Behavioral Disturbances. *Journal for healthcare quality: official publication of the National Association for Healthcare Quality*, 41(5), 267-273. https://doi.org/10.1097/JHQ.0000000000000208					**Using JHNEBP Level and Quality III-A**
Purpose/ Hypothesis	**Type of Evidence Research Design**	**Sample – Population, Size, Setting**	**Intervention/Procedures**	**Primary Outcome/Measures**	**Results/Conclusions**

"The purpose of the the study was to determine whether behavioral optimization and out comes support team (BOOST) program is effective in reducing the perceived burden in the care of patients with behavioral disturbances and increasing feelings of support and safety at work."	**Design:** Cross-sectional survey design	**Sampling:** Convenience sampling **# Eligible**: 150 staff members were eligible for the survey, and 82 staff were approached to participate **# Accepted:** 64 staff accepted the survey **Setting:** Medical surgical unit in a General Teaching Hospital in the United States **Population:** Nurses (80%), social workers (12%), and unit managers (5%). **Power analysis:** Not provided in the study **Group Homogeneity:** All participants are staff members who provide patient care and with access to BOOST. No observable difference in the participants.	**Intervention:** The staff survey assessed staff perceptions of enhanced safety at work due to the availability of the BOOST intervention and elements of the BOOST program that contributed or did not contribute to the staff's sense of support. **Procedure:** The survey was sent to all staff who participated in the BOOST program in 2014 and provided informed consent. **Intervention Fidelity:** The survey data was distributed and collected by a research assistant. The survey questions were the same for all participants.	**DV:** Staff perception of safety at work due to the availability of BOOST service. **DV Measure:** Staff perception of safety at work was measured using a survey. Descriptive statistics were obtained for all survey responses and chart review data. No inter-rater reliability was documented for the survey. Content validity not reported.	**Statistical Results:** The study reported a decrease in staff perception of the burden of patients' behavioral issues from 4.6 pre-intervention to 4.2 post-intervention ($p < .05$). About 78% of staff who responded to the survey reported that access and support from the BOOST service enhanced their perception of safety at work. **Conclusions:** BOOST was associated with improved and timely access to expert psychiatric intervention for a patient with behavioral issues and decreased risk of escalating behaviors. Intervention programs such as BOOST provide care providers with effective resources to manage patient care and improve the quality of care.
Citation: Arnetz, J. E., Hamblin, L., Russell, J., Upfal, M. J., Luborsky, M., Janisse, J., & Essenmacher, L. (2017). Preventing Patient-to-Worker Violence in Hospitals: Outcome of a Randomized Controlled Intervention. *Journal of Occupational and Environmental Medicine*, 59(1), 18-27. https://doi.org/10.1097/JOM.0000000000000909					**Using JHNEBP Level and Quality I-B**
Purpose/ Hypothesis	**Type of Evidence Research Design**	**Sample – Population, Size, Setting**	**Intervention/Procedures**	**Primary Outcome/Measures**	**Results/Conclusions**
"The purpose of this study is to evaluate the impact of an intervention aimed at reducing hospital violence by prospectively tracking population-based incidence rates of patient-to-worker	Randomized controlled intervention with a mixed-method approach	**Intervention group (n=21 units=1612 employees):** Received unit-level violence data to facilitate the development of an action plan for violence prevention **Control group (n=20 units =1251 employees):** No data provided to control units **Population:** Hospital workers in acute care nursing, intensive	**Intervention units:** -2,642 walkthroughs on the 21 intervention units over 6 weeks (45 minutes/ unit). Researchers and stakeholder representatives performed a walkthrough with the unit supervisors. Unit supervisors develop a plan for workplace violence reduction using an adapted version of an existing checklist with a list of possible violence risk	**Dependent Variable:** Incidence of patient-to-staff workplace violence and related injury across study groups over time. Workplace violence is defined "as any type of physical or non-physical violence, including physical assault, verbal abuse, bullying, harassment or intimidation directed towards hospital employees".	**Statistical Results:** No significant differences in rates of violent events between the intervention and control groups at baseline, 6, 12, and 18 months. At 6 months, the ratio of incident rates of violent events was significantly lower in the intervention compared to the control unit after the intervention (IRR 0.48, 95% CI 0.29-0.80). The risk for violence-related injury was lower in

violence and related injury."		care nursing, emergency department, psychiatry, security, and surgery. **Setting:** Multiple Hospital System, Midwest United States **Sample Size:** 41 units across 7 hospitals (2,800 employees) **Power analysis:** Not reported in the study. **Group Homogeneity:** Both units (intervention and control) were sorted based on the number of full-time equivalents to ensure size similarity before randomization. The age difference between the hospital workers in the intervention group and control group was reported but is inconsequential.	factors and evidence-based strategies for violence reduction. **Control Units**: Received no walkthroughs and violence data. **Intervention Fidelity:** The walkthrough team has no role in determining the violence reduction strategy implemented in the intervention units. The number and nature of the action plan received by the research team are reviewed for intervention fidelity. A one-year post-intervention follow-up online survey was completed on both the intervention and control units to assess implemented violence reduction strategies.	**DV measure:** Violent events were measured by documented incidents of violence (with or without injury), and workers' compensation cases were processed centrally through the loss time management department. "Violence-related injuries were a subset of violent events where a loss time management claim was initiated, and the employee was seen in the employee health clinic."	intervention units in comparison to the control units (IRR 0.37, 95% CI 0.17-0.83) at 24 months post-intervention. **Conclusions:** The intervention unit implemented behavioral, administrative, and environmental violent management strategies that proved to be effective in the reduction of workplace violence and injury. The workplace violence monitoring, risk assessment, and intervention approaches utilized in this randomized study can be used in hospitals across the nation to enhance the safety of healthcare employees.
Citation: Lakatos, B. E., Mitchell, M. T., Askari, R., Etheredge, M. L., Hopcia, K., DeLisle, L., Smith, C., Fagan, M., Mulloy, D., Lewis-O'Connor, A., Higgins, M., & Shellman, A. (2019). An interdisciplinary clinical approach for workplace violence prevention and injury reduction in the general hospital setting: S.A.F.E. response. *Journal of the American Psychiatric Nurses Association*, *25*(4), 280-288. https://doi.org/10.1177/1078390318788944					**Using JHNEBP Level and Quality V-A**
Purpose/ Hypothesis	**Type of Evidence Research Design**	**Sample – Population, Size, Setting**	**Intervention/Procedures**	**Primary Outcome/Measures**	**Results/Conclusions**
"The purpose of this study is to develop, implement and evaluate SAFE (Spot a threat, Assess the risk, formulate a plan, and evaluate the outcome)- a quality improvement program to address workplace violence and prevent staff injury."	Quality Improvement	**Sampling Technique:** Convenience sampling **Setting:** Large urban teaching hospital in Northeast, United States **Sample Size**: 1,866 employees (46% were female and 50% male) completed the survey as consent to participate in the study. Sixty-one percent identified their roles (42% nurse, 7% physician, 2% social	**Intervention**: Mandatory eLearning/training which provided interactive online education on de-escalation techniques for all participants, a SAFE response with standardized interventions for the clinical conditions affecting safety, and a clinical debriefing process **Intervention Fidelity:** SAFE was modeled after Rapid Response (RR) already in place in the hospital to de-escalate behavioral issues. The team response mitigates	**DV:** Workplace violence and staff nursing staff injury **DV Measure:** Data that were measured include staff injury obtained from occupational health, security, and employee safety reporting system. The staff survey assessed staff attitudes toward managing aggression. The survey was developed by 9 staff who have expertise in workplace violence in the system to improve the content validity and reliability.	**Statistical Result:** The incidence of assault on nursing staff was evaluated after a year and a half of implementing SAFE to examine its effectiveness. An average of 40% decrease in nursing staff injury rates were reported. **Conclusion** There was a reduction in the assault against nursing staff members after the implementation of the SAFE project. Education and training of staff on de-escalation skills and

		work, 10% other), whereas 39% did not identify their role. **Power analysis:** Not applicable in quality improvement study **Group homogeneity**: Participants work in a hospital setting; age and gender are homogenous. Clinical roles are heterogeneous.	security intervention through prompt assessment and intervention to address the cause of the behavioral issue. Post-assessment and incident are documented using the Situation, Background, Assessment, and Recommendation (SBAR) process.	The survey was approved by the institutional review board as one component of a quality improvement initiative	creating resources to mitigate unsafe situations can reduce workplace injury and improve overall safety for patients and staff.
Lamont, S., & Brunero, S. (2018). The effect of a workplace violence training program for generalist nurses in the acute hospital setting: A quasi-experimental study. *Nurse Education Today*, *68*, 45-52. https://doi-org.proxy-hs.researchport.umd.edu/10.1016/j.nedt.2018.05.008					**Using JHNEBP Level and Quality 11-A**
Purpose/ Hypothesis	**Type of Evidence Research Design**	**Sample – Population, Size, Setting**	**Intervention/Procedures**	**Primary Outcome/Measures**	**Results/Conclusions**
"The purpose of the study is to examine the effects of a workplace violence training program in relation to risk assessment and management practices, de-escalation skills, breakaway techniques, and confidence levels, within an acute hospital setting."	**Design:** Quasi-experimental pre-post-test measurement of a single group	**Sampling Technique:** Convenience sampling **#Eligible:** 104 workshop attendees **#Accepted:** 78 attendees (completed pre and post-evaluation questionnaire) **Setting**: 440-bed hospital in Sydney, Australia **Population:** Nurses in different specialties (aged care, emergency department, neurosciences, community) **Power analysis:** A sample size of 71 participants (alpha 0.05) is required, with a power of 80%. **Group Homogeneity:** This is a homogenous sample of nurses with different roles, but the majority are clinical nurses.	**Intervention:** One-day workshop focused on violence risk assessment and management plans, de-escalation techniques, and use of breakaways **Intervention Fidelity:** Self-enrolled mandatory workshops through a centralized learning management system, part of staff mandatory employment requirements. Study questionnaires were voluntary. Workshop and training facilitated by two mental nurse consultants with expertise in the topic. Training content was piloted in a one-day workshop involving twelve senior nurses (managers, educators, and nurse consultants).	**Dependent Variable:** Staff confidence levels in the management of aggression were assessed using a questionnaire administered before the training and 2 weeks post-training. **DV Measure:** Confidence in managing aggressive patients was assessed with pre-and post-questionnaires. A validated instrument, Confidence in Coping with Patient Aggression Instrument (a 10-item 10-point Likert scale with a reliability Cronbach alpha of 0.95) was utilized to assess staff confidence level in managing verbal and physical aggression.	**Statistical Results:** Statistical changes in staff confidence level scores were assessed using paired t-tests from pre- to post-intervention ($p < 0.001$). **Clinical Significance: The** large effect size (Cohen's $d=1.15$) post-test showed a significant increase in overall confidence level in coping with patient aggression. **Conclusions:** The effect sizes support the relevance of workplace violence intervention within an organizational learning framework. Organizational development of an effective response system, training, and education is essential in addressing the increasing incidence of workplace violence. Initiation of a dedicated workplace violent management program is a critical element to the success of an organization in maintaining employee safety

Citation: Zicko, C., Schroeder, L., Byers, C., Taylor, L., & Spence, C. (2017). Behavioral emergency response team: implementation improves patient safety, staff safety, and staff collaboration. *Worldviews on evidence-based nursing, 14*(5), 377–384. https://doi.org/10.1111/wvn.12225					**Using JHNEBP Level and Quality V-A**
Purpose/ Hypothesis	**Type of Evidence Research Design**	**Sample – Population, Size, Setting**	**Intervention/Procedures**	**Primary Outcome/Measures**	**Results/Conclusions**
"The purpose of this study is to determine how behavioral emergency response team (BERT) implementation affects staff and patient safety as well as to examine nursing staff's level of knowledge, confidence, and support in caring for psychiatric patients and patients exhibiting behavioral emergencies."	Quality Improvement with Pre- and Post-implementation survey design	**Population:** The members of the project implementation team include mental health clinical nurse specialists, mental health nurse practitioners, continuous improvement officers, medical-surgical nurses, mental health unit leadership, mental health nurse, informatics nurse, research nurse, and security personnel. **Setting:** Adult inpatient in a military facility **Power analysis:** Not reported in the study **Group Homogeneity:** Team members are homogenous in their roles, gender, and experience.	**Interventions:** Staff training on BERT background, purpose, definition, call parameters, unit and member roles, documentation requirements, debrief process, feedback methods, and resources. **Intervention Fidelity:** The unit leadership, clinical nurse specialist, or training officer conducted staff training with a PowerPoint presentation that was designed specifically for BERT.	**Dependent Variables**: Staff level of knowledge, confidence, and support in caring for patients with behavioral issues and staff/patient safety. **DV Measure:** Pre- and post-implementation surveys that measured staff level of knowledge, confidence, and support in caring for a patient exhibiting aggressive behaviors on a 10-point Likert scale were utilized. The content validity of the survey was reviewed by doctoral- and master's prepared nurses. All measures were recorded in a Microsoft Excel spreadsheet. SPSS for windows version 21 was used to analyze the survey results. Staff and patient safety effects are recorded by the date and location of the incident and measured by the number of code green/security interventions, number of staff assaults/injuries, and number of BERT calls	**Statistical Results:** Post the 5-month pilot phase, the number of assaults and security interventions decreased by 83% and restraint usage decreased by 80%. The 10-month implementation shows a reduction in assault (90%), security interventions (93%), and restraints usage (87.5%). **Significance:** Pre- and post-implementation surveys showed staff levels of BERT knowledge and support significantly increased ($p < .05$). However, there was a decrease in staff confidence and in managing patients with behavioral issues outside of their units. **Conclusion:** The study concluded that BERT was effective in de-escalating aggressive patients and improving overall staff and patient safety as well as staff collaboration. The implementation of the BERT team in an inpatient military adult unit was effective in the reduction of assault, code green utilization and security intervention.

Table 2

Evidence Review Synthesis

Category (Level Type)	Total Number of Sources/Level	Overall Quality Rating	Synthesis of Findings
Level 1 - Experimental study · Randomized Controlled Trial (RCT) · Systematic review of RCTs with or without meta-analysis	Randomized Controlled Trial	Arnetz et al. (2017) **B**	Six months after implementation, Arnetz et al. (2017) found that interventions aimed at reducing workplace violence were effective. The ratio of incident rates of violent events was significantly lower in the intervention unit compared to the control unit (IRR 0.48, 95% CI 0.29-0.80). The workplace violence monitoring, risk assessment, and intervention approaches utilized in this randomized study can be used in hospitals across the nation to enhance the safety of healthcare employees
Level II · Quasi-experimental studies · Systematic review of a combination of RCTs and quasi-experimental studies, or quasi-experimental studies only, with or without meta-analysis	2-Quasi-experimental Design	(Adams et al. 2017; Lamont & Brunero, 2018) **A**	Adams et al. (2017) found that the utilization of verbal de-escalation increased significantly after the intervention (p=0.011, 1df) and there was a notable decrease in the frequency and recurrence of violent incidents. Lamont & Brunero (2018) reported a statistical change in staff confidence level scores 2 weeks after workplace violence training. The findings of both studies were similar. Organizational development of an effective response system, training, and education is essential in addressing the increasing incidence of workplace violence.
Level III · Non-experimental study · Systematic review of a combination of RCTs, quasi-experimental, and non-experimental studies, or non-experimental studies only, with or without meta-analysis · Qualitative study or systematic review of qualitative studies with or without meta-synthesis	Cross-Sectional Design	Afriyie-Boateng et al. (2018) **A**	Afriyie-Boateng et al. (2018) reported a decrease in staff perception of the burden of patients' behavioral issues from 4.6 pre-intervention to 4.2 post-intervention ($p < .05$). The study reported that 78% of staff who responded to the survey confirmed access and support from the behavioral optimization and outcomes support team (BOOST) intervention enhanced their perception of safety at work. BOOST was associated with improved and timely access to expert psychiatric intervention for a patient with behavioral issues and decreased risk of escalating behaviors.
Level IV · Opinion of respected authorities and/or reports of nationally recognized expert committees/consensus panels based on scientific evidence			
Level V · Evidence obtained from literature reviews, quality improvement, program evaluation, financial evaluation, or case reports · Opinion of nationally recognized expert(s) based on experiential evidence	2- Quality Improvement (QI)	(Zicko et al. 2017; Lakatos et al. 2019) **A**	The QIs were conducted in inpatient hospital settings in non-psychiatric units. Pre- and post-survey according to Zicko et al. (2017) reported a significant increase in staff level of BERT knowledge and support after implementation ($p < .05$) and a reduction in the number of staff assaults by 83% post-5-month pilot phase. Lakatos et al. (2019) evaluated SAFE after a year and a half of implementation and reported a 40% decrease in nursing staff injury rates. Education and training of staff on de-escalation skills and creating resources to mitigate unsafe situations can reduce workplace injury and improve overall safety for patients and staff.
Recommendations Based on Evidence Synthesis: Strong, compelling evidence, consistent results: solid indication for a practice change			

Table 3

Measures and Impact of BOOST

Process Goal(s)		
Staff knowledge of BOOST	100% increase staff knowledge of BOOST	Measured using a pre-implementation survey before education/BOOST implementation
Staff satisfaction with BOOST	100% staff satisfaction with BOOST	Measured after BOOST pilot implementation with a survey
Outcome Goal(s)		
BOOST call utilization	50% increase in BOOST call utilization	Measured weekly by the number of BOOST call notification
Code green Calls	25% decrease in Code Green calls	Measured weekly by the number of code green notification
Number of staff assaults/injuries	25% decrease in the number of patients to staff injury assault injuries	Measured post-BOOST pilot implementation by security logbook

Table 4

Pre-Implementation Survey Table

Questions						
Indicate the number of years you have been practicing nursing	29% (9 staff)- less than 2 years	19% (6 staff) 2-5 years	26% (8 staff) 5-10 years	26% (8 staff) more than 10 years		
Indicate how many times you have experienced aggression/violence from a patient in the past year.	7% (2 staff) none	19% (6 staff) once	16% (5 staff) twice	3% (1 staff) three times	13% (4 staff) four times	42% (13 staff) more than 5 or more
Rate your confidence level in taking care of a patient with behavioral issues	7% (2 staff) Very unconfident	7% (2 staff) not confident	36% (11 staff) Neutral	39% (12 staff) Confident	13% (4 staff) very confident	
Indicate how many times have you activated/responded to code green in the past year.	13% (4 staff) none	29% (9 staff) once	13% (4 staff) two times	13% (4 staff) three times	3% (1 staff) four times	29.0% (9 staff) 5 times
Rate your level of knowledge of behavioral optimization and outcomes support team (BOOST)	23% (7 nurses) poor	29% (9 nurses) fair	29% (9 nurses) average	13% (4 nurses) good	10% (3 nurses) excellent	

Survey questions and the percentage of nurses who completed the BOOST pre-implementation survey (n=31). Respondent #31 checked knowledge of BOOST as poor and average in the survey question. That explains the total number of 32 nurses in the last question instead of 31 nurses.

Table 5

Post-Implementation Survey Table

Questions						
Indicate the number of years you have been practicing nursing	32% (10 staff)- less than 2 years	23% (7 staff) 2-5 years	19% (6 staff) 5-10 years	26% (8 staff) more than 10 years		
Indicate how many times you have experienced aggression/violence from a patient in the past 4 months.	19% (6 staff) none	10% (3 staff) once	23% (7 staff) twice	16% (5 staff) three times	6% (2 staff) four times	26% (8 staff) more than 5 or more
Rate your confidence level in taking care of a patient with behavioral issues	3% (1 staff) Very unconfident	3% (1 staff) not confident	26% (8 staff) Neutral	55% (17 staff) Confident	13% (4 staff) very confident	
Indicate how many times have you activated/responded to code green in the past 4 months.	43% (13 staff) none	20% (6 staff) once	23% (7 staff) two times	10% (3 staff) three times	3% (1 staff) four times	
Indicate how many times have you activated/responded to BOOST in the past 4 months.	61% (19 staff) once	16% (5 staff) two times	23% (7 staff) three times	0% (0 staff) four times	0% (1 staff) five times	
Rate your level of knowledge of behavioral optimization and outcomes support team (BOOST)	3% (1 nurse) poor	3% (1 nurse) fair	36% (11 nurses) average	51% (16 nurses) good	7% (2 nurses) excellent	
Rate your satisfaction level with the use of BOOST	3% (1) not satisfy	29% (9) neutral	49% (15) satisfy	19% (6) very satisfy		

Survey questions and the percentage of nurses who completed the BOOST post-implementation survey (n=31)

Table 6

Implementation Strategies and Tactics

Strategies	Specific Tactical Approaches
Accountability	Commitment from the organization to implement Use a pilot unit Active engagement of the project lead
Buy-in	Include leadership, stakeholders, and facilitators in BOOST and offer recognition
Collaboration	Identify early adopters and learn from their experiences Involving executive leadership members in BOOST implementation
Communication	Weekly team meeting every Thursday at 3 pm Ongoing consultation with CSR and BOOST team
Change in structure	Develop a BOOST activation algorithm Develop a tool for monitoring implementation outcomes
Data	Develop and organize quality data monitoring systems Monitor and collect data weekly
Education	Develop a BOOST education tool Educate nursing staff on the pilot unit through the UMMS module and conduct a pretest and posttest to validate knowledge of BOOST.

Figure 1

Framework: IOWA Model of Evidence-Based Practice Implementation

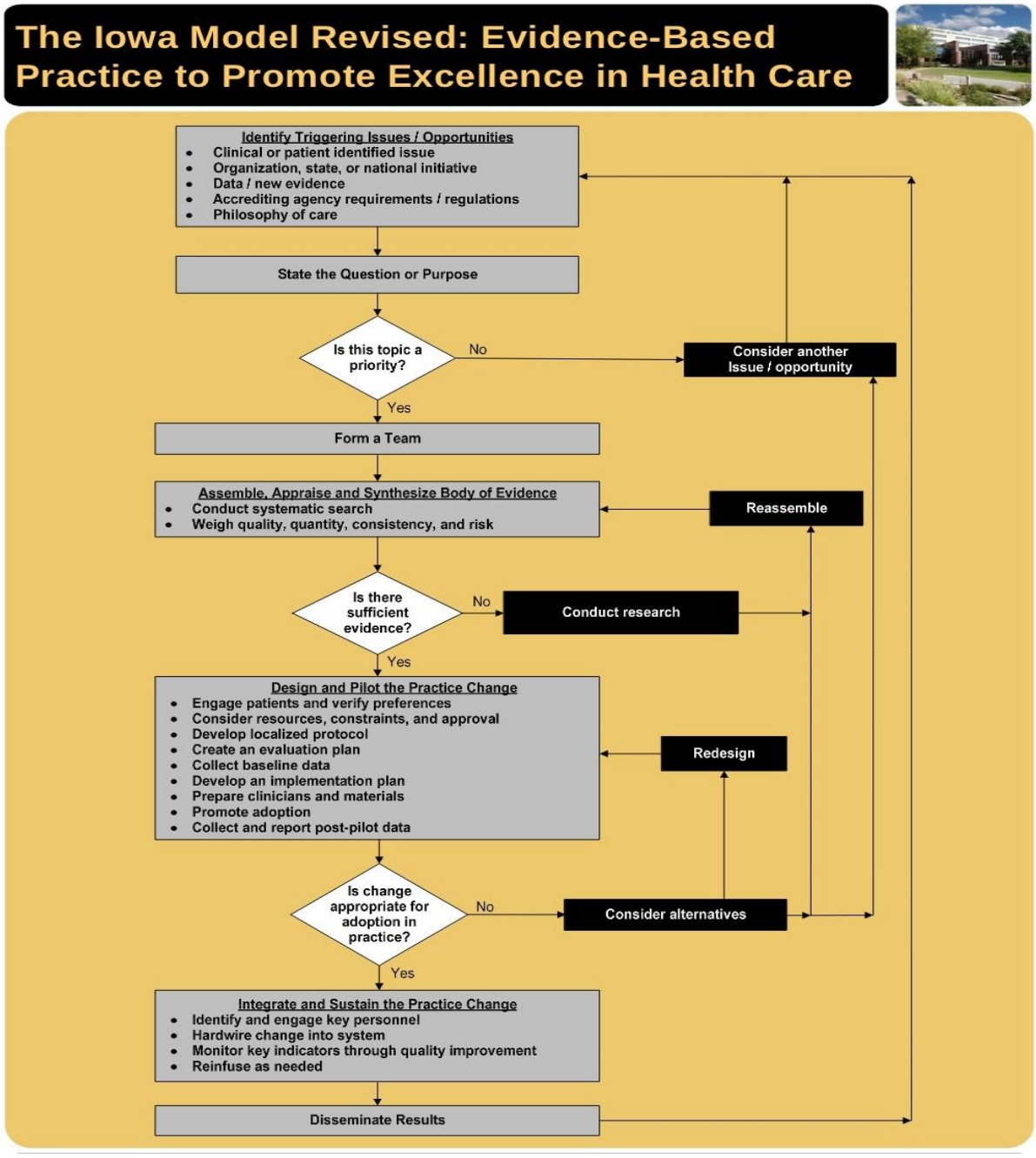

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Figure 2

Current Process

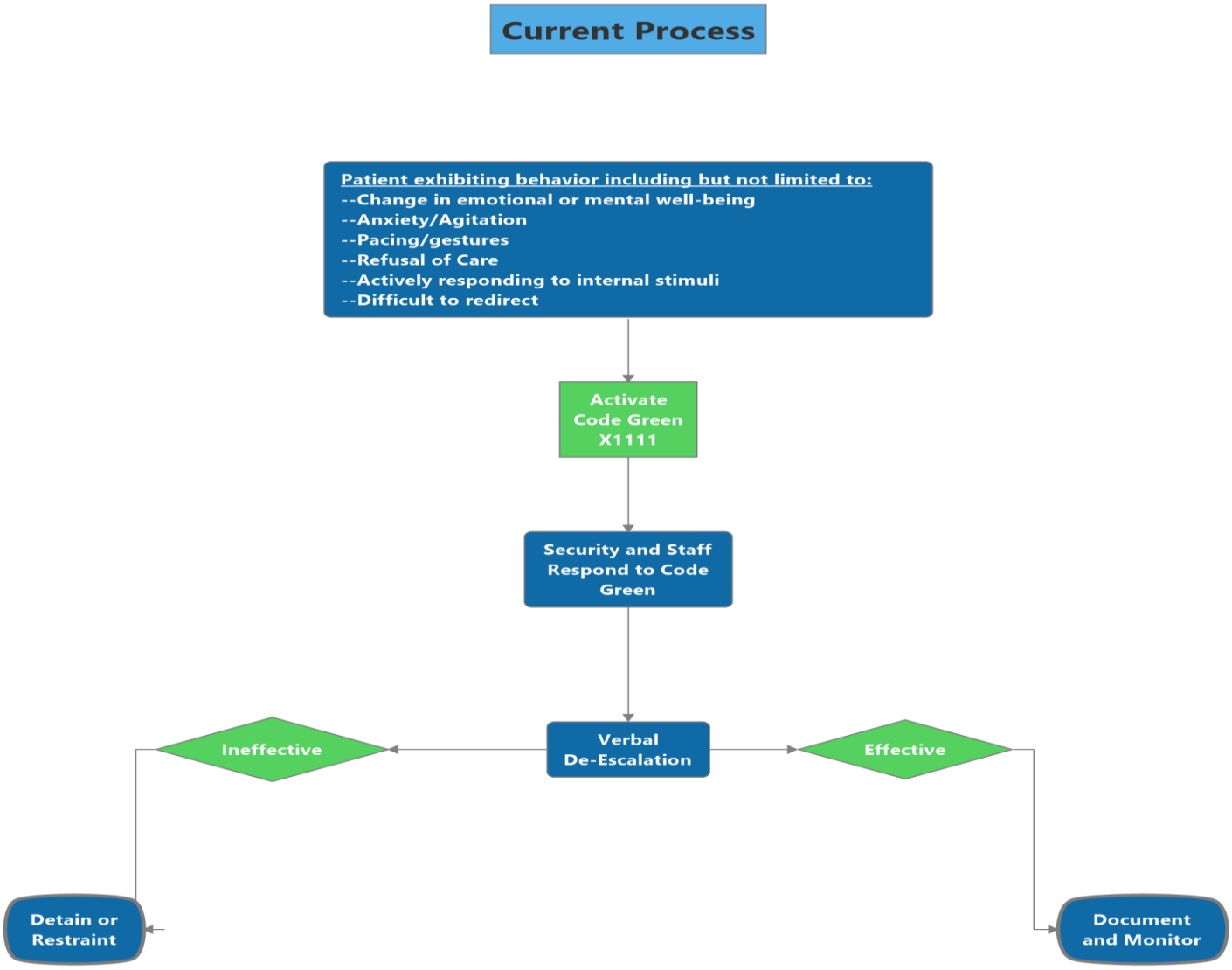


Figure 3

The Proposed Process

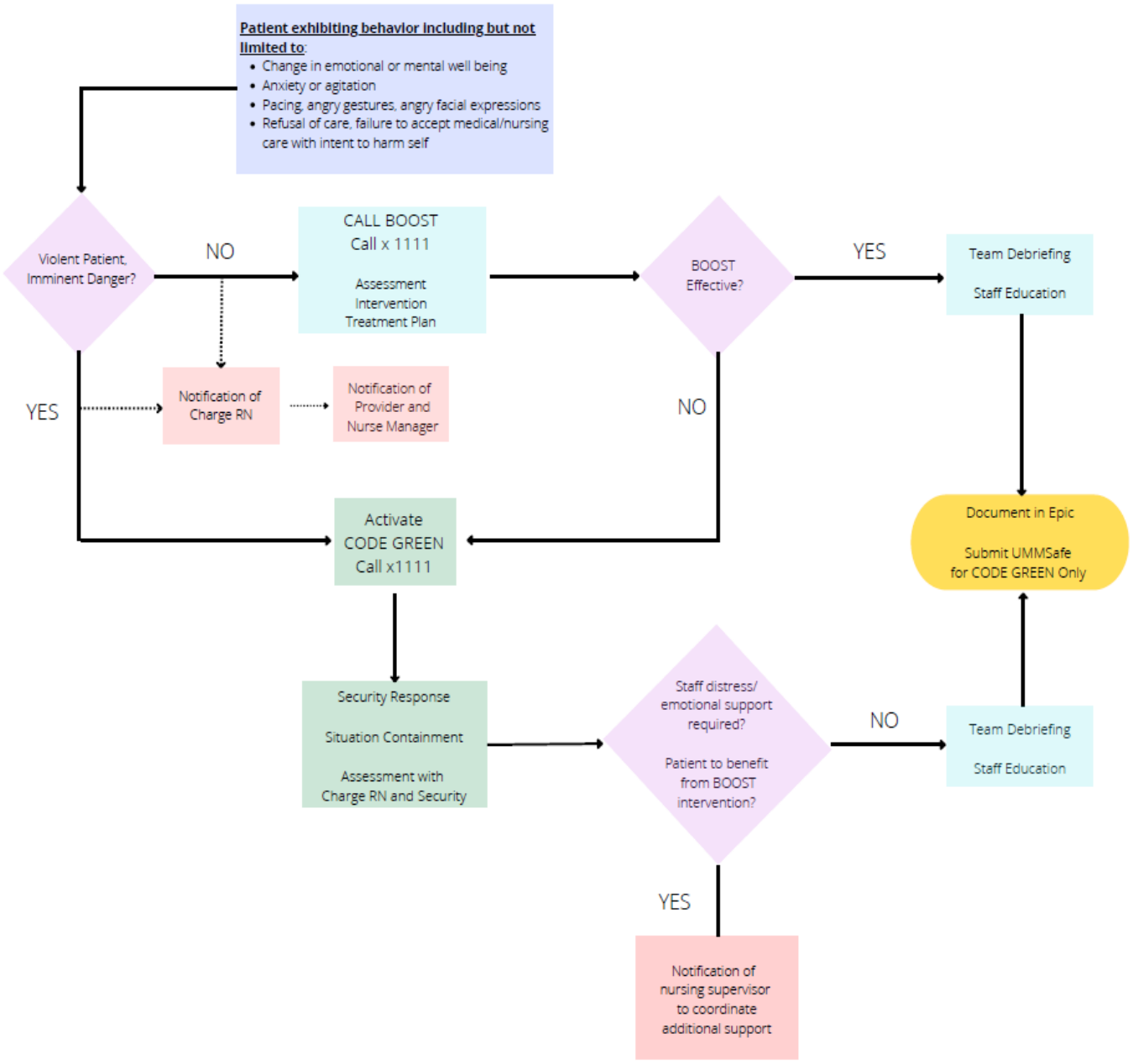


Figure 4

Run Chart of Weekly BOOST Calls

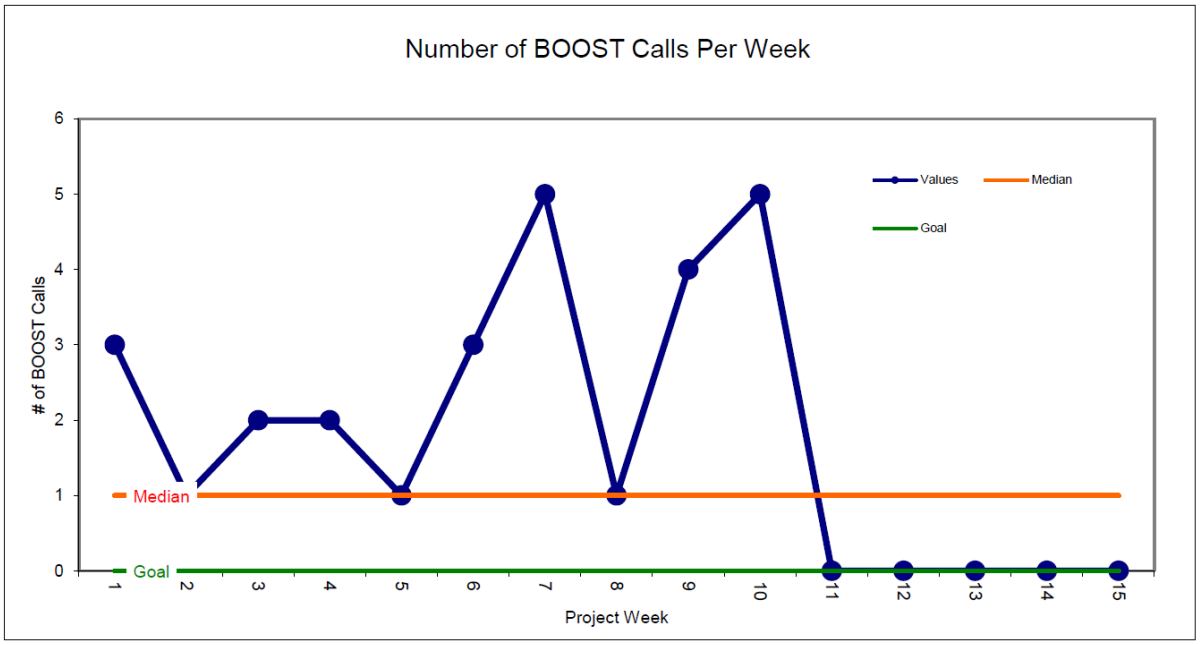


Figure 5

Run Chart of Weekly Code Greens

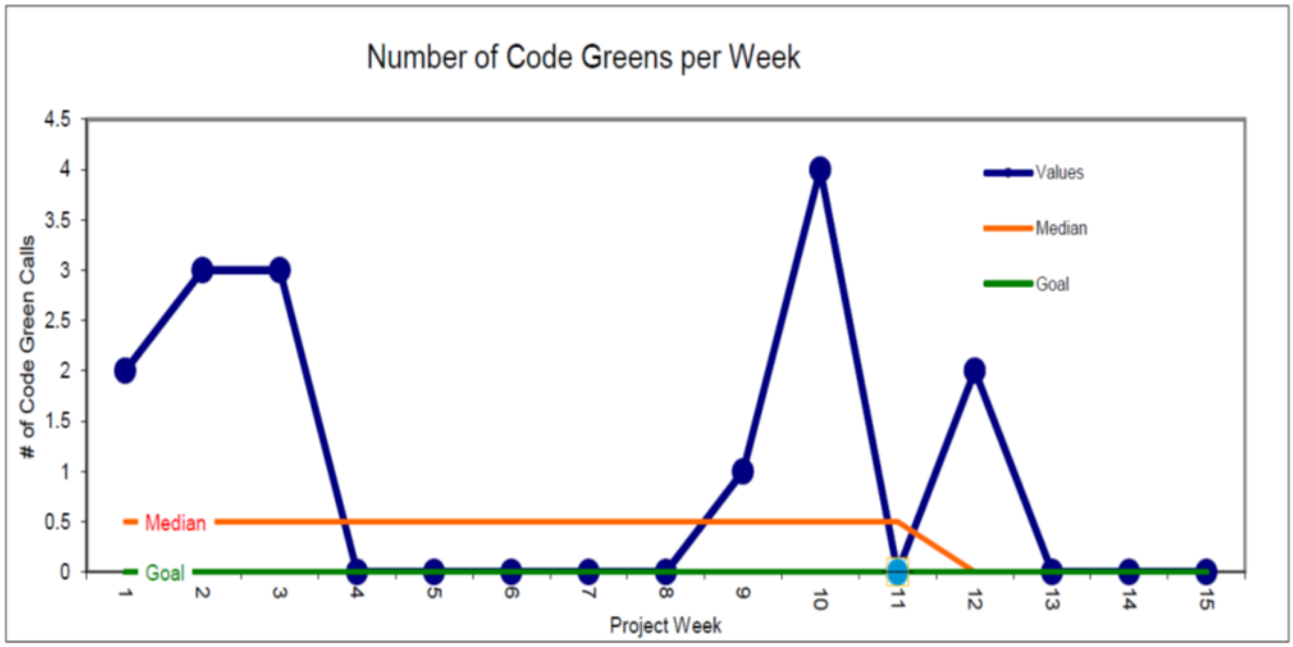
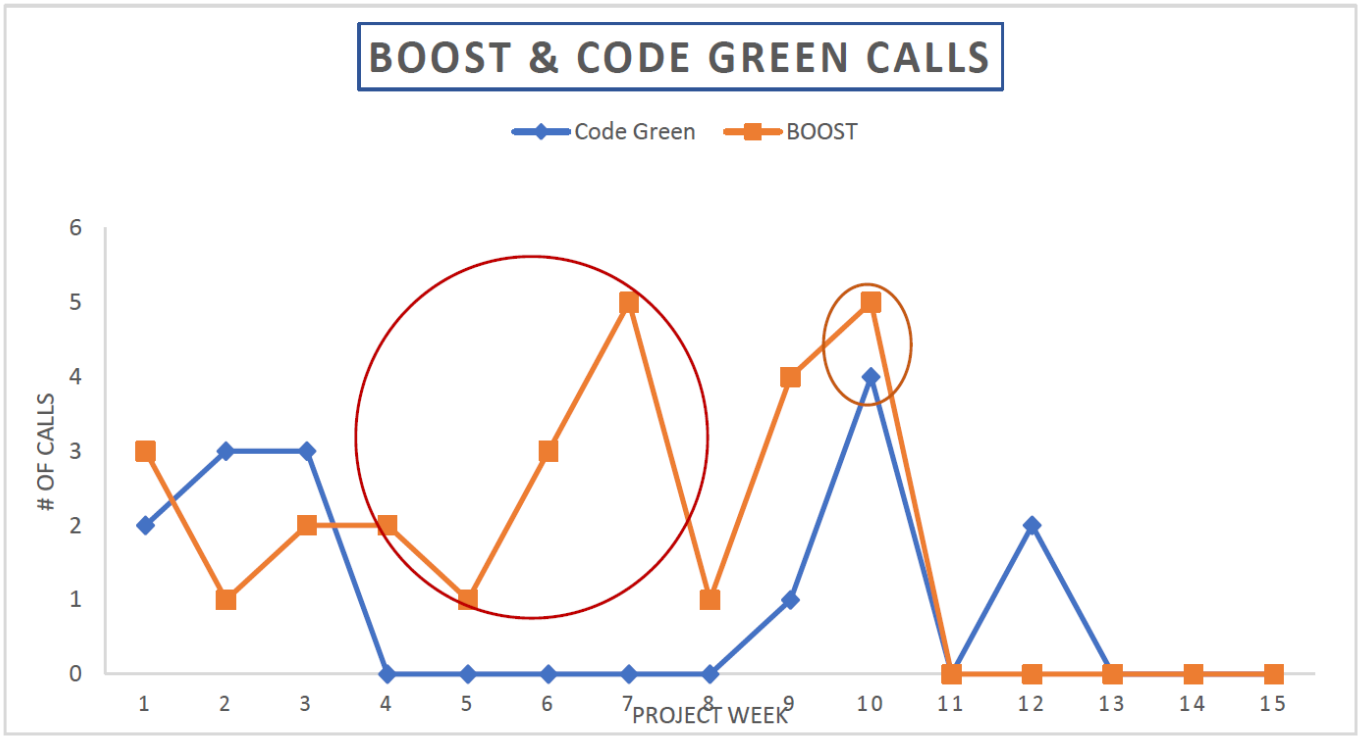


Figure 6

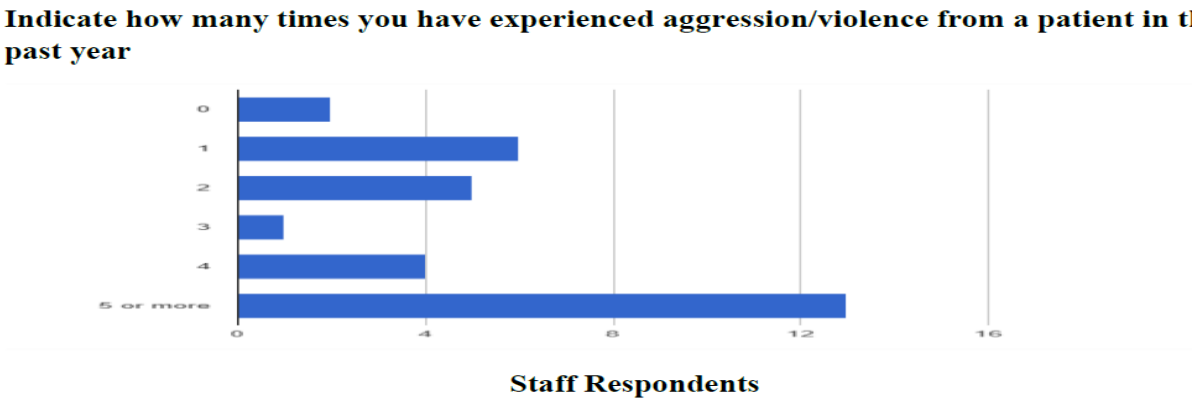
Superimposed Weekly Run chart of BOOST and CG Calls

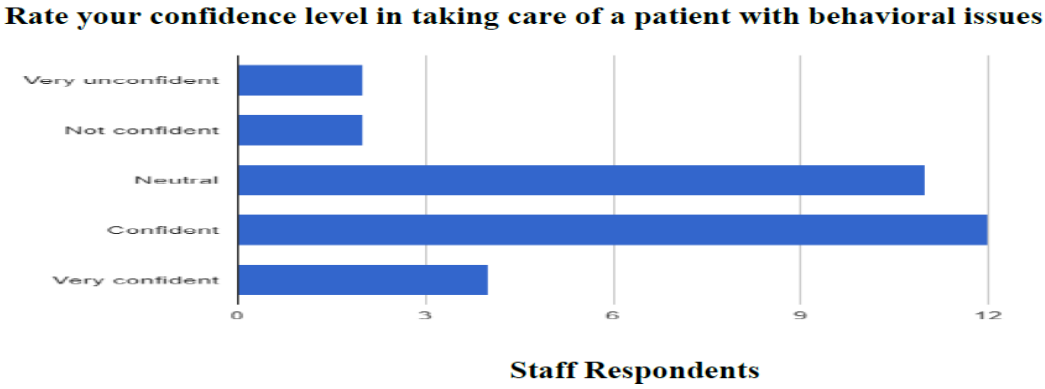


Week 4-8: 100% increase BOOST calls
Week 10: 56% BOOST and 44% CG calls
: Increase utilization of BOOST and CG in week 10
: Repeat calls and threatening behaviors

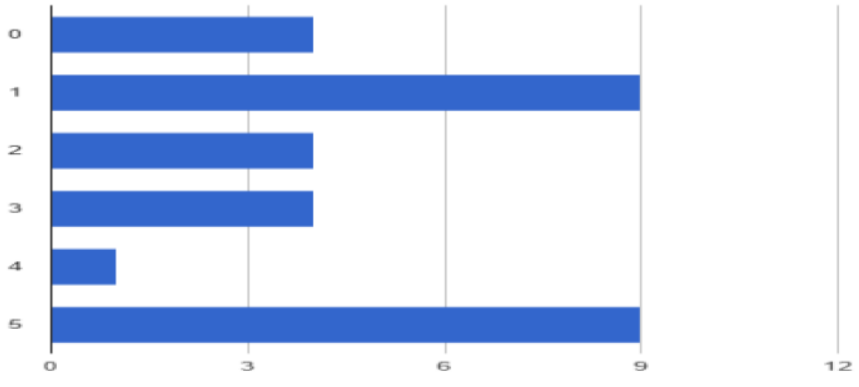
Figure 7

BOOST Pre-Implementation Survey



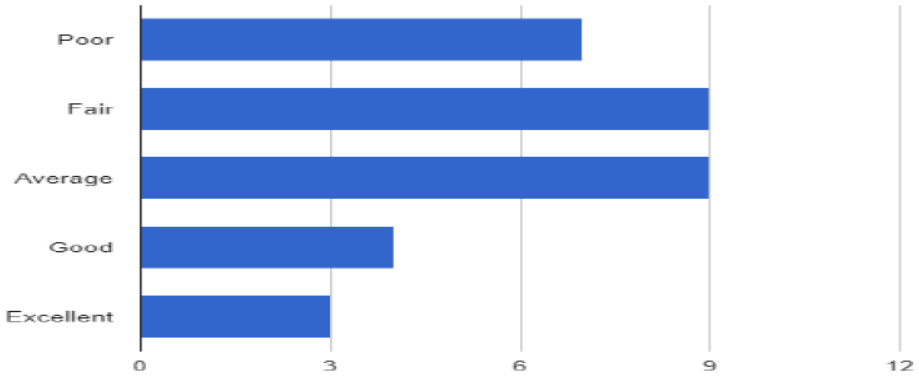


Indicate how many times have you activated/responded to code green in the past year



Staff Respondents

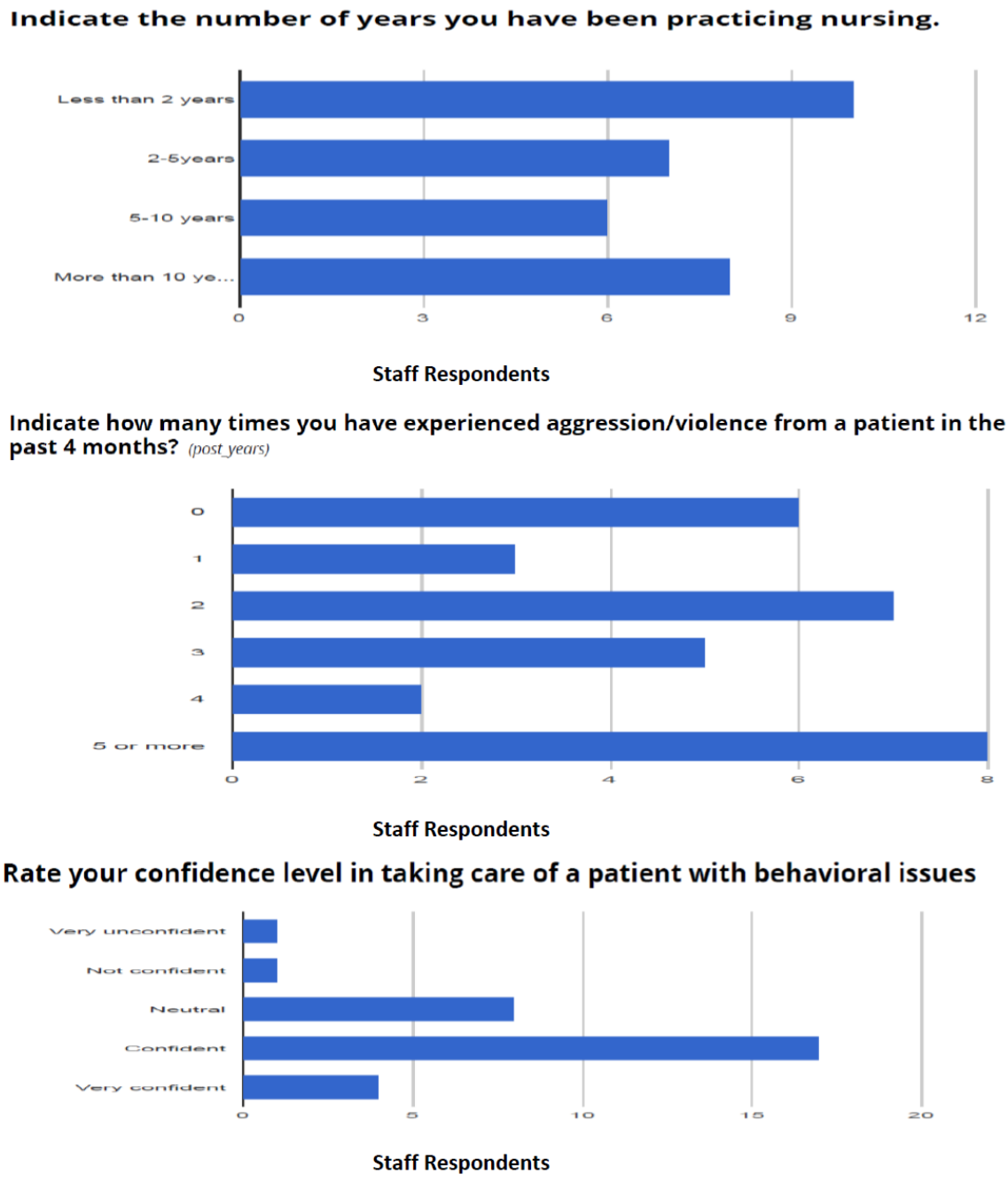
Rate your level of knowledge of behavioral optimization and outcomes support team (BOOST)



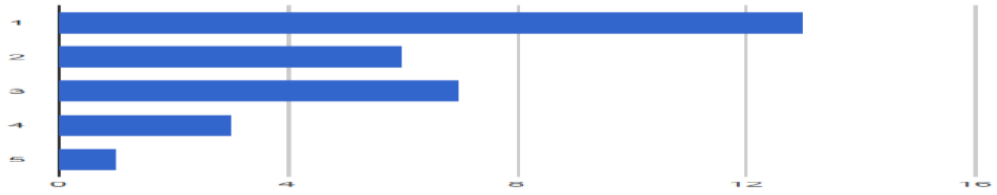
Staff Respondents

Figure 8

BOOST Post-Implementation Survey

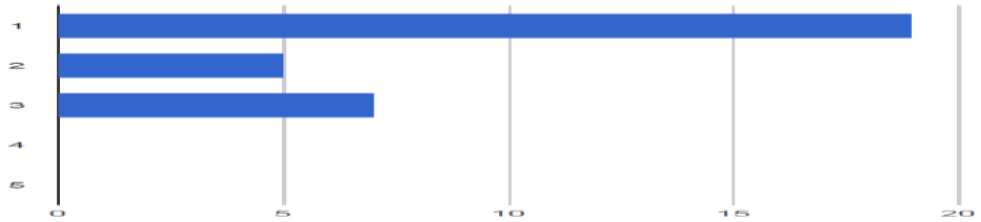


Indicate how many times have you activated/responded to code green in the last 4 months? *(post_code_green)*



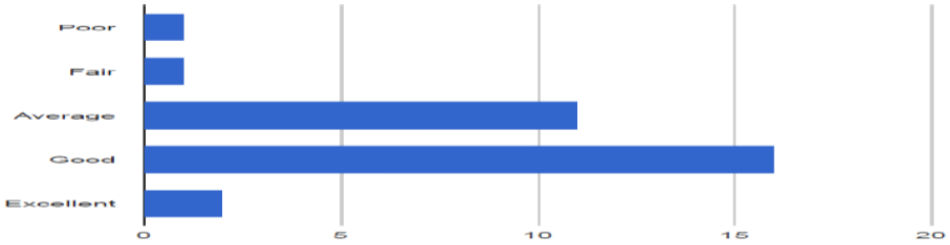
Staff Respondents

Indicate how many times have you activated/responded to BOOST calls in the last 4 months? *(post_bert)*



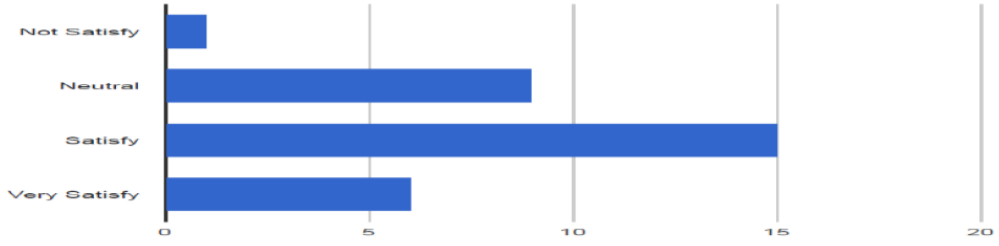
Staff Respondents

Rate your level of knowledge of behavioral optimization and outcomes support team (BOOST) *(post_knowledge)*



Staff Respondents

Rate you satisfaction level with the use of BOOST



Staff Respondents

Appendix A

BOOST Pre-Implementation Survey Questions

1)	Respondent #	_____
2)	Indicate the number of years you have been practicing nursing.	☐ Less than 2 years ☐ 2-5years ☐ 5-10 years ☐ More than 10 years
3)	Indicate how many times you have experienced aggression/violence from a patient in the past year?	☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 or more
4)	Rate your confidence level in taking care of a patient with behavioral issues	☐ Very unconfident ☐ Not confident ☐ Neutral ☐ Confident ☐ Very confident
5)	Indicate how many times have you activated/responded to code green in the past year?	☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
6)	Rate your level of knowledge of behavioral optimization and outcomes support team (BOOST)	☐ Poor ☐ Fair ☐ Average ☐ Good ☐ Excellent

Appendix B

BOOST Post-Implementation Survey Questions

1)	Respondent #	_____
2)	Indicate the number of years you have been practicing nursing.	☐ Less than 2 years ☐ 2-5years ☐ 5-10 years ☐ More than 10 years
3)	Indicate how many times you have experienced aggression/violence from a patient in the past 4 months?	☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 or more
4)	Rate your confidence level in taking care of a patient with behavioral issues	☐ Very unconfident ☐ Not confident ☐ Neutral ☐ Confident ☐ Very confident
5)	Indicate how many times have you activated/responded to code green in the last 4 months?	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
6)	Indicate how many times have you activated/responded to BOOST calls in the last 4 months?	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
7)	Rate your level of knowledge of behavioral optimization and outcomes support team (BOOST)	☐ Poor ☐ Fair ☐ Average ☐ Good ☐ Excellent
8)	Rate you satisfaction level with the use of BOOST	☐ Not Satisfy ☐ Neutral ☐ Satisfy ☐ Very Satisfy

Appendix C

BOOST Visual Tool

Appendix D

Permission to Use the IOWA Model

Permission to Use The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care

1 message

Kimberly Jordan - University of Iowa Hospitals and Clinics <survey-bounce@survey.uiowa.edu> Tue, Nov 29, 2022 at 8:01 PM
Reply-To: Kimberly Jordan - University of Iowa Hospitals and Clinics <kimberly-jordan@uiowa.edu>
To: cmba001@umaryland.edu

You have permission, as requested today, to review and/or reproduce *The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care.* Click the link below to open.

Iowa Model - 2015.pdf

Reference: Iowa Model Collaborative. (2017). Iowa model of evidence-based practice: Revisions and validation. *Worldviews on Evidence-Based Nursing, 14(3), 175-182. doi:10.1111/wvn.12223*

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