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## PATIENT SAFETY AND QUALITY IMPROVEMENT EXEMPLARS

# Multidisciplinary Protocol for Managing Violent Patients and Promoting Workplace Safety in the Intensive Care Unit

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**Introduction:** Workplace violence is a prevalent issue in healthcare, yet there is limited evidence describing management options to improve workplace safety associated with violent patients and families. Even less is known about reducing violence in intensive care units (ICUs), a healthcare setting that commonly serves patients at high risk of aggressive behaviors. Multifaceted, interdisciplinary, and institution-specific interventions are recommended to address workplace safety.

**Methods:** Our institution developed 4 interventions to address violent patients in our ICUs. The interventions included a Disruptive/Aggressive Behavior Algorithm, "Code Gray" Box, Rapid Sedation Protocol, and Customer Service Representative. The primary measure used to assess effectiveness of the interventions was the number of security calls to the ICUs.

**Results:** After the 4 interventions were implemented, the number of security calls to the ICUs decreased from October 2013 to August 2016.

**Discussion:** Implementing the 4 interventions decreased the number of calls to security, despite encouraging staff to call security earlier for potentially violent patients. This trend may represent a decrease in violent episodes, increased staff confidence in managing violent patients, or improved early recognition of high-risk patients.

**Conclusions:** Violent patients and families in the ICU is an understudied safety issue. Our institution used a multifaceted, interdisciplinary approach to create and implement interventions that reduced the need for security personnel to respond to safety threats of ICU staff. These interventions could guide other institutions aiming to decrease workplace violence and promote workplace safety.

**Keywords:** workplace violence, patient violence, workplace safety, intensive care unit safety

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Workplace violence is prevalent in US healthcare. In 2016, for every 10,000 workers, 14.7 injuries were reported in non-government owned hospitals and 35.3 injuries were reported in nursing and residential healthcare, as opposed to 2.8 injuries reported per 10,000 workers in the private sector that included the non-healthcare industry.<sup>1</sup> Based on 3 federal datasets, non-fatal workplace violence against healthcare workers increased approximately 12% from 2011

to 2013.<sup>1</sup> In addition, workplace violence started by patients and family members is likely underreported in healthcare, suggesting that actual rates are higher than documented.<sup>2,3</sup> Published guidelines that describe how to design and promote safe work environments for healthcare professionals are generally non-specific and recommend that individual institutions address this issue with an interdisciplinary approach.<sup>4</sup>

Psychiatric, emergency, and geriatric specialties experience the highest frequency of workplace violence.<sup>1,2,5</sup> Notably, limited data are published on the prevalence and management of workplace violence in intensive care units (ICUs) in the United

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States. Staff members providing patient care in the ICU setting may be particularly vulnerable to workplace violence because they often interact with patients at high risk for hostile behaviors. High-risk patients include individuals with head trauma, pain, and/or a history of abusive behaviors, violence, substance use, and psychiatric disorders.<sup>2,6</sup> Families and friends of ICU patients often have the same risk factors, which can lead to violent or potentially violent interactions with healthcare staff.

Most admissions to the ICU are unplanned due to trauma, burns, complex surgical procedures, brain injury, or other rapidly deteriorating conditions. These unanticipated events are associated with extreme stress and heightened anxiety for patients and families. Open-visitation policies have reduced patient delirium and shortened length of stay in the ICU. Therefore, family engagement is recommended as a part of comprehensive ICU care promoted by the Society of Critical Care Medicine.<sup>7,8</sup> For most cases, patient visitations are safe, facilitate patient care, and increase ICU efficiency. But occasionally, visitations may result in inappropriate or violent bedside behaviors related to the complexity, stress, and frustrations associated with critical illness.

Our index case was a 26-year-old man with a history of post-traumatic stress disorder, depression, intravenous drug use, and recent imprisonment. He was admitted for hypothermia, blunt head trauma, and altered mental status with acute hypoxic respiratory failure requiring intubation. A sedation wean was attempted. The patient became agitated and removed his endotracheal tube. Additional sedation was administered for patient safety. The patient became agitated again and began removing his intravenous lines. Staff attempted to redirect the patient. The patient became violent and forcefully pushed a staff member into a sink, which fractured their scapula, and tore their rotator cuff. The situation also caused them significant emotional distress, which extended to other staff members who were present at the time of injury and to those who had similar experiences caring for previous patients.

Because no ICU-specific models were available, we created an approach to better protect hospital staff and patients, and to promote a culture of safety within our ICUs. Our multifaceted, interdisciplinary approach redesigned the existing response of our institution to disruptive or violent patients and families in the ICU.

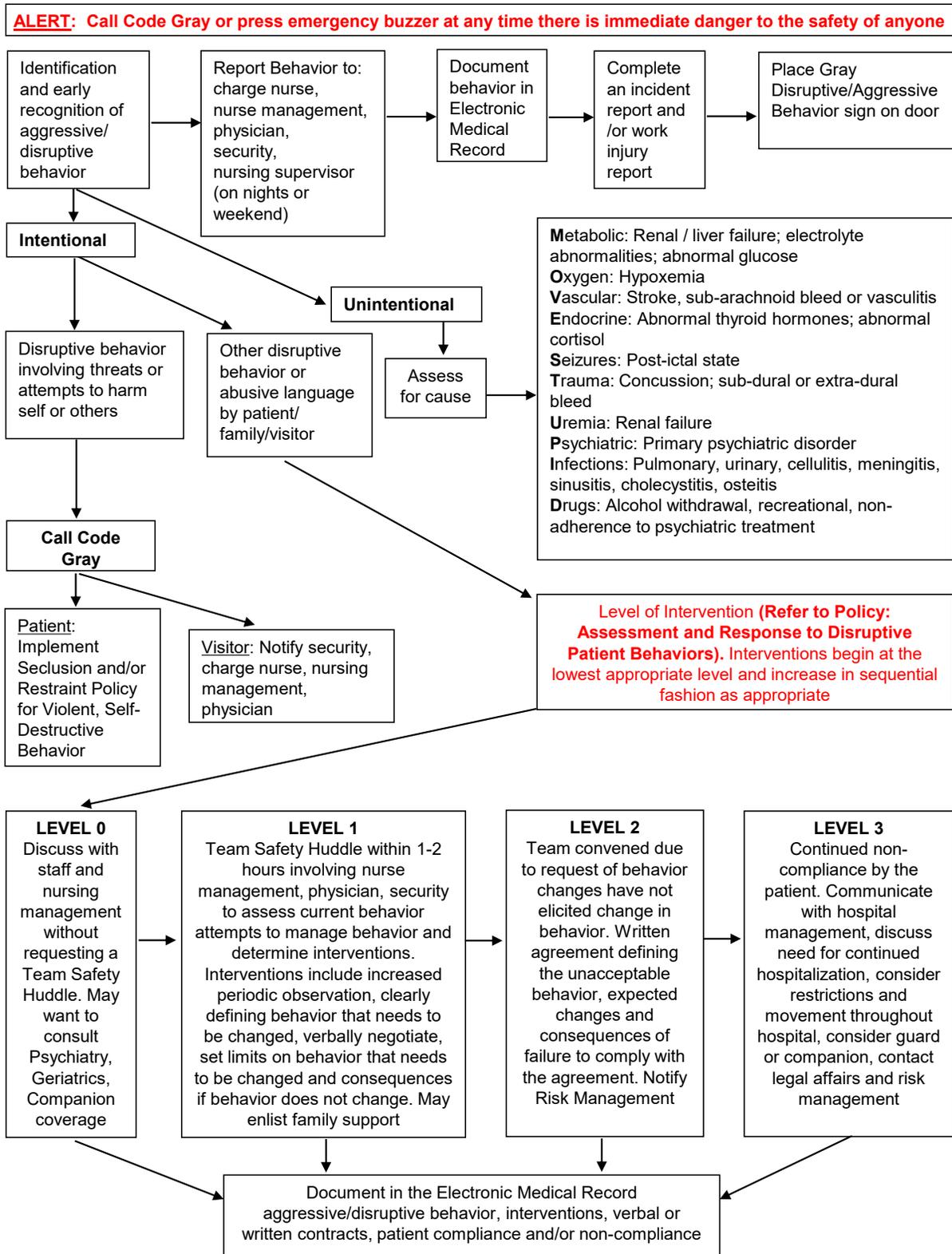
## METHODS

Our institution is a tertiary care teaching hospital with 600 beds, of which 42 are for mixed medical, neurological, cardiothoracic, and surgical intensive care. After the index case, a multidisciplinary behavior response team was established to address workplace safety. This team consisted of nurses, physicians, pharmacists, administrators, and security staff. Over 8 monthly meetings, the team developed an action plan and led training sessions to implement 4 interventions to address violent patient behavior: Disruptive/Aggressive Behavior Algorithm, “Code Gray” Box, Rapid Sedation Protocol, and a Customer Service Representative. The interventions and their supportive protocols were disseminated over 4 training sessions, each lasting 2 hours. Participants in the training sessions included ICU nurses, care partners, physicians, security personnel, and applicable administrative staff.

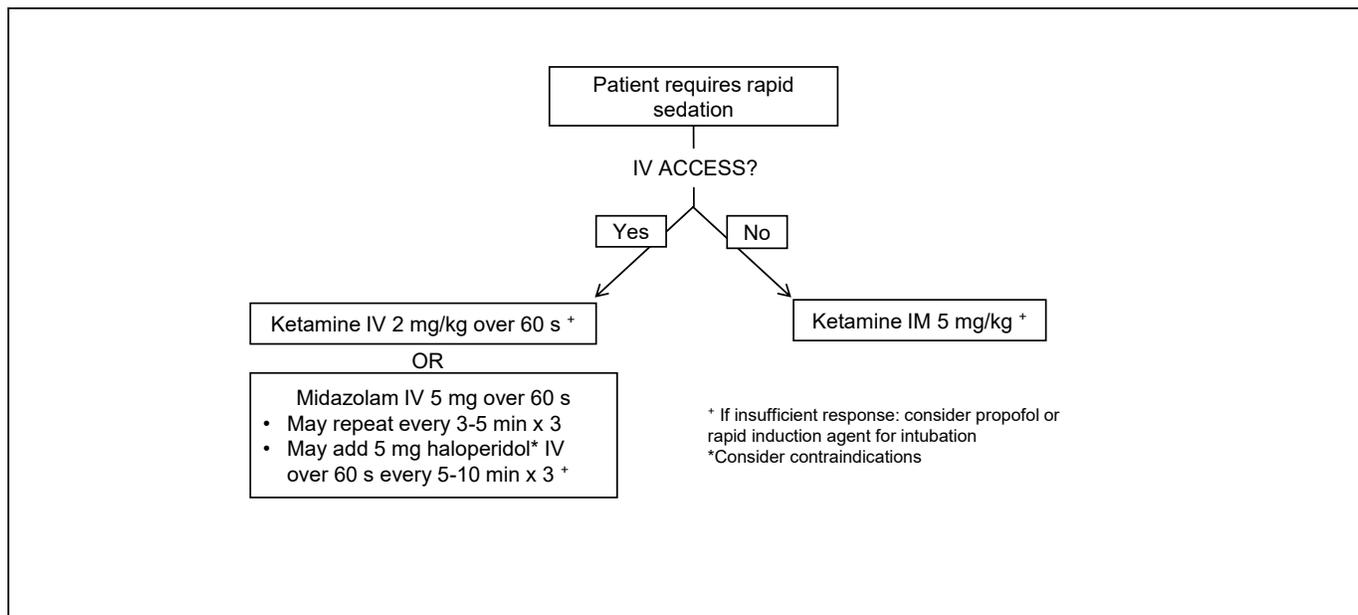
The Disruptive/Aggressive Behavior Algorithm (Figure 1) outlines the communication and procedures to be followed when a potentially violent patient or family member poses a risk that cannot be readily contained. Simultaneously, emergency buzzers that linked directly to our security department were installed throughout the ICUs for when an immediate response was needed. Staff was encouraged to use the emergency buzzers if they felt threatened and/or emergently required additional personnel in the ICU.

To streamline the response in dangerous situations, we created a “Code Gray” Box that centralized materials needed to care for a violent patient. The Box contains personal protective equipment (facemasks with shields, gowns, and gloves), physical restraints, and supplies for administering chemical restraints (alcohol pads, syringes, and needles).

The Rapid Sedation Protocol (Figure 2) was developed to standardize sedation strategies for violent patients. The protocol recommends specific medication dosing and administration based on patient weight and intravenous access. The protocol was designed by pharmacists and anesthesiologists to rapidly and safely control behavior with pharmacological agents while maintaining patient and staff safety.<sup>9,10</sup>



**Figure 1.** The Disruptive/Aggressive Behavior Algorithm. The interdisciplinary behavioral response team designed the algorithm to address workplace safety in the ICUs. The algorithm was distributed and reviewed with ICU staff during 4 training sessions.



**Figure 2.** The Rapid Sedation Protocol. This protocol includes agents, dosing, and route of administration to use, if needed, for the safety of patients and staff. IM, intramuscular; IV, intravenous; s, seconds; min, minutes; mg, milligram; kg, kilogram.

A designated Customer Service Representative was stationed at the entrance to the ICU, where they could identify potential indicators of violence. They also encouraged visitations at appropriate times that do not interfere with procedures, tests, or imaging; provided the ICU staff control over time-sensitive care; and anticipated families' needs for basic comfort and information. We postulated that taking better care of families would reduce stress, thereby reducing hostility at the bedside.

To measure the effectiveness of our interventions, we retrospectively reviewed the number of times that security staff were called to help manage violent behavior in the ICUs from October 2013 to August 2016. Calls for non-violent patients were excluded. The data were compiled into a control chart and analyzed with the Nelson Rules. This established method determines if specific factors or interventions influenced output variability. We applied Nelson Rules 1 and 3. Nelson Rule 1 is 1 data point more than 3 standard deviations from the mean, and Nelson Rule 3 is 6 or more consecutive data points that are continually increasing or decreasing.<sup>11</sup>

## RESULTS

Activation of security staff to the ICUs, as measured by the number of security calls over the 2-year period, is presented in Figure 3. The 4 staff-training sessions offered along with the implemented

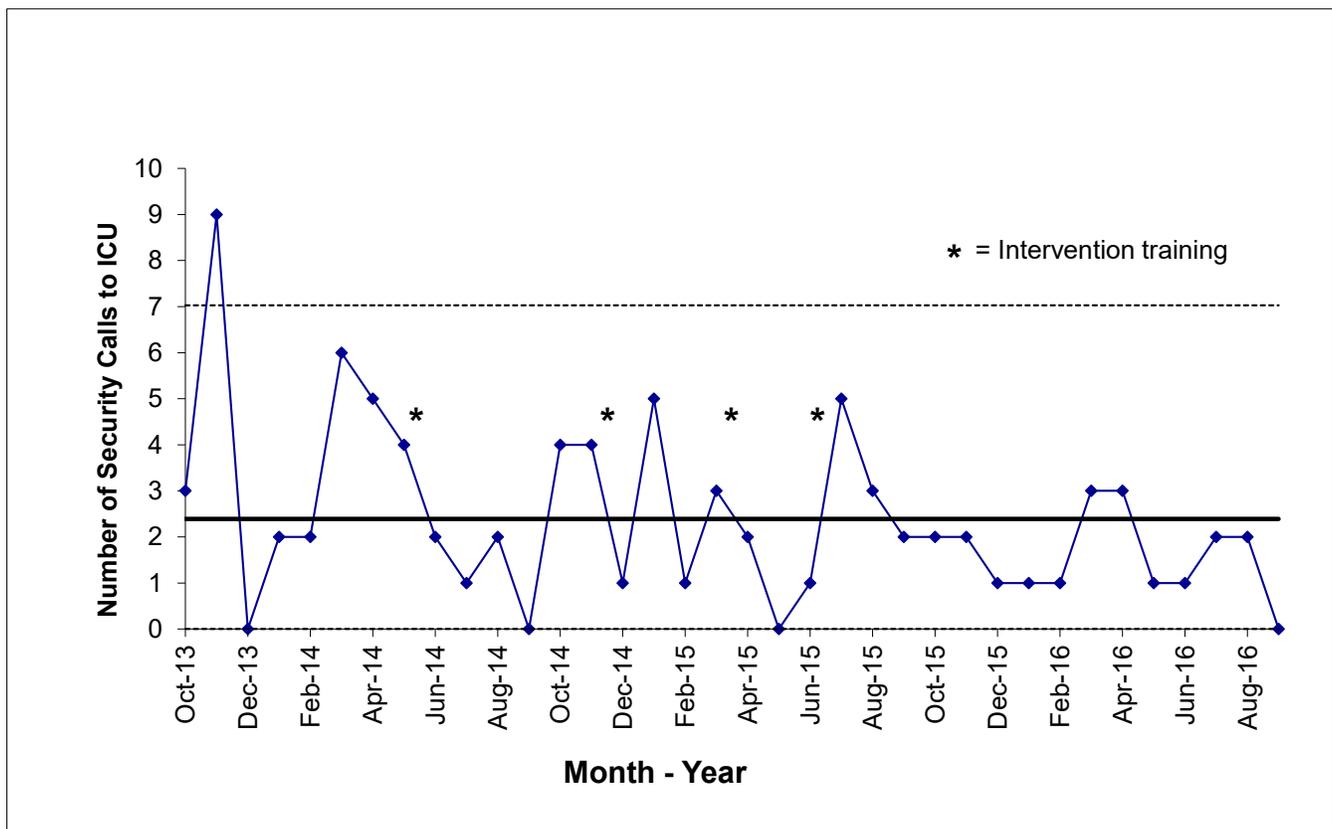
interventions are also shown in Figure 3. Before the interventions, by Nelson Rule 1, there was variability in security calls in October 2013. The first 3 intervention trainings did not affect the consistency of security calls, as the number of calls continued to fluctuate above and below the mean from October 2013 to June 2015. After the fourth implementation session, following Nelson Rule 3, we observed a decreasing trend in the number of security calls to the ICUs (Figure 3).

We did not assess the efficacy of our Rapid Sedation Protocol because our records indicated that it was not accessed during the study period.

## DISCUSSION

Workplace violence is a persistent and underreported problem in healthcare, with a dearth of information about its management in the ICU setting. Caregiver staff recognized that their security and the safety of patients and families was the highest priority, which represented a culture change regarding an issue that was unaddressed for a long time. As a result, we created an interdisciplinary team, implemented protocols to identify and manage violent patients, and added a customer service representative to the staff. These efforts were associated with an increase in workplace safety in our ICUs.

After implementing our interventions, the need for security to be dispatched to our ICUs trended



**Figure 3.** C-chart for activation of security personnel to the ICUs in response to violent behaviors. The implementation of interventions at 4 discrete training sessions is labeled.

downward. Only after the last training session did we observe a notable decrease in variability of security calls and a downward trend. This finding suggests that multiple sessions are needed to solidify training and create an effect.

Notably, the downward trend in calls to security occurred after dissemination of an algorithm that encouraged early engagement of security personnel. Such an algorithm may increase security calls; however, our findings showed a decrease. This decrease suggests that our interventions reduced the rate of patient and family violence in our ICUs. Alternatively, the decrease in security calls could represent an increased staff confidence in workplace safety and their ability to manage difficult patients and families without escalation to security. Though unproven within our study design, an increased confidence in available support during challenging situations involving violent patients or family members could reduce caregiver burnout.<sup>6</sup> Studies directed at caregiver burnout should be considered in future research.

Through our experience, we recognized the importance of identifying patient risk factors to anticipate and prepare for violent or potentially violent encounters. These risk factors include drug abuse, alcohol abuse, history of violence, certain psychiatric diagnoses, and inadequate security.<sup>5</sup> The early recognition of potential workplace violence and training may have contributed to preemptive management without escalation to security personnel.

Current literature recommends multifaceted, interdisciplinary and institution-specific interventions to address workplace safety.<sup>4</sup> However, the specifics of management options and evidence supporting such solutions have not been described. Our study presents detailed interventions that improve workplace safety with an indirect measurement. These interventions could be further developed, tested, and adapted to the needs of ICUs at other institutions. Further prospective studies would be beneficial.

Limitations of our study include the simultaneous implementation of interventions, making it difficult

to assess which intervention most significantly improved safety. In addition, security activation does not directly measure patient or family violence and may not capture minor events, resulting in underreported data. Future studies should focus on more direct outcome measures, including staff-reported safety events, incident reports, and work-related injuries. Changes in the number of patients treated and the characteristic risk factors for violence may have confounded our data, which should be corrected in future studies. We did not measure participation in the implementation sessions, which limits our ability to understand whether the type or consistency of staff is associated with outcomes. A prospective study would help to better characterize specific interventions that decrease workplace violence.

## CONCLUSIONS

Workplace violence is a prevalent, yet understudied, issue in the ICU setting. Limited evidence exists to support solutions to address violent patients or families.<sup>3,4</sup> Our institution developed a multifaceted, interdisciplinary approach to reduce violence and create workplace safety in the ICUs with 4 interventions. These interventions can be used as a guide for other health systems to develop similar protocols that have been adjusted to meet the unique needs of an institution, staff, and patients. Further research is needed to standardize the approach to violent or potentially violent patients and families in order to protect the safety of healthcare staff and patients.

**Conflicts of Interest:** None

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