Violence and Aggression in the Intensive care: What is the impact of Australian National Emergency Access Target?

Authors

Ms Albertina Pol* - The Alfred Hospital, Melbourne, Australia - RN, BN and Rural Health Practice, CCRN, Master of Nursing (Intensive Care).
Email: a.pol@alfred.org.au

Dr Melody Carter - School of Nursing and Midwifery La Trobe University, Melbourne, Australia - PhD RGN
Email: melody.carter@worc.ac.uk

Dr Stéphane Bouchoucha – Deakin University, Geelong, Australia RN, PhD, MSc, BSc (Hons), ENB100
Email: s.bouchoucha@deakin.edu.au

The Alfred Hospital
55 Commercial Road
Melbourne, Victoria 3004

* Corresponding author: a.pol@alfred.org.au
Violence and Aggression in the Intensive care: What is the impact of Australian National Emergency Access Target?
Abstract

**Introduction.** Violence in healthcare settings is a concern for healthcare professionals and patients. Media reports, and debate within the healthcare profession, and the academic literature infer that workplaces such as Intensive Care Units are becoming exposed to increasing violence. Increases in the incidence of violent behaviour are sometimes attributed to the increased pressure on Emergency Departments to accelerate the throughput of patients in order to meet targets. To ensure the wellbeing of patients and staff, there is a need to evaluate the impact of such targets. The aim in this study was to evaluate the incidence and describe the context in which patients’ aggressive and violent behaviours occurred since the introduction of the National Emergency Access Target in a local tertiary Australian intensive care unit.

**Methods.** A retrospective examination of events triggering violence related emergency codes from 12 months prior to the introduction of the National Emergency Access Target up until 12 months following its implementation (2011 to 2013).

**Results.** A small increase in the number of Code Grey/Code Black activation was identified following the introduction of the target (pre = 18, post = 29). Admissions following drug overdoses, isolated head trauma and cardiac arrest were the presentations most likely to have been associated with a violence related emergency call. Female registered nurses, male critical care registered nurses and clinical nurse specialists were the most at risk of occupational violence. Male nursing staff were found to be more likely to be involved in incidences of verbal violence ($p < .003$).

**Conclusion.** Although there was a minimal increase in the overall number of emergencies triggered by violent behaviour, valuable information on the type of occupational violence occurring towards healthcare professionals and patients in this setting was found. We suggest that these findings add further important detail to the existing understanding of the problem of occupational violence. These detailed insights can further inform policy development, professional education and practice.

**Keywords:** Aggressive Behaviour; Violent Behaviour; Code Grey/Code Black; Emergency Department; National Emergency Access Target (NEAT); Intensive Care Unit; Occupational Violence; Nursing.
Introduction

Occupational violence is a widespread problem in healthcare settings. The introduction of the National Emergency Access Target (NEAT), also known as the ‘four hour rule program’ (1), in Australia, has led to a perception that its implementation is an explanation for an increase of violence in settings such as the Intensive Care unit (ICU). This perceived increase in occupational violence through anecdotal reports prompted this investigation. We sought to establish whether or not an ICU had an actual or perceived increased incidence of occupational violence following the NEAT implementation. It had been suggested that increased pressure to admit to the ICU from the Emergency Department (ED) earlier than previously, could be a factor contributing to the perceived increase of occupational violence. This might have been due to time constraints placed upon EDs to meet the NEAT with patients previously managed in the ED being transferred to the ICU earlier (2).

The implementation of a four-hour target for EDs or Four Hour Rule Program (FHRP) initially started in the United Kingdom (UK) in 2000 (3). This target originally aimed for 100% of the patients attending the ED to be seen, treated and discharged, admitted to an inpatient facility or transferred to a more appropriate location, within four hours of arrival into the ED. The target was later adjusted to 98% to allow for patients to be kept in the ED in order to be stabilised fully before transfer, in case of clinical instability (3). In Australia, the NEAT was initially trialled in April 2009 in Western Australia and subsequently introduced to the public healthcare system in January 2012. At the study site, the NEAT was introduced in November 2012. Although the NEAT is still a nationwide target, it was renamed Emergency Treatment Performance (ETP) in 2015 in New South Wales (4).

The implementation of the NEAT was reported to have provided some positive changes such as improved patient throughput, reduced overcrowding in the ED, improved timeliness to ED care, decreased hospital mortality and improved discharge planning (5-7). While there are clear benefits to patients and the ED, some drawbacks in other areas have also been reported. Some of these drawbacks included an increase in delayed discharges from the ICU, resulting in increased length of
stay, increased complexity in the planning and arrangement of patient transfers, for example, to wards that may not be equipped or otherwise prepared to provide the specialised and intensive care required (5, 8).

There is some acknowledgement that occupational violence in the healthcare setting is already a serious issue (9-14). The manifestation of violence or aggression is considered to be complex and multifactorial, with contributing factors such as organisational, environmental and individual components being recognised as influential (15, 16). Examples of violent behaviours experienced and reported by nurses and midwives in Victoria included being bitten, kicked, punched, pushed, threatened with weapons and even included some death threats (17). In rural areas, Alexander (9) showed that the most frequent form of violence was verbal, followed by threatening behaviour, physical violence and sexualised behaviour. Gender differences were also reported, with male nurses proportionally more likely to receive higher rates of physical assaults or violent behaviour than female nurses (18, 19). Under reporting is another aspect surrounding occupational violence that is widely recognised in the healthcare setting (11, 15, 19-21). An explanation for underreporting could be the varying definitions of what constitutes occupational violence. Beech (11) highlighted that studies investigating workplace violence usually have different meanings and criteria for what is defined as occupational violence. For example, who is involved, what constitutes violence and where the incident takes place, all have an impact on whether or not violence is considered to be occupational violence. These varying and perhaps socially or culturally determined definitions make any comparison of the exact rates of occupational violence between countries or organisations challenging. The terms aggression and violence are often used interchangeably. The definition of aggression considered for the study was as defined by the health service: “any incidents in the clinical setting in which staff are threatened, abused or assaulted in circumstances arising out of, or in the course of, their employment” (22, p.3). Violence is sometimes defined differently from aggression as it is more likely to have an intent to cause harm than aggression (23). There is sometimes an overlap between the two and as stated by the World Health Organization (WHO) (2002): ‘Defining it is not an exact science but a matter of judgement.” (24, p.4).
For the purposes of this study, the definition of occupational violence developed by the International Labour Office (ILO) and the WHO in the healthcare setting has been adopted. Occupational violence is defined as:

Incidents where staff are abused, threatened or assaulted in circumstances related to their work, including commuting to and from work, involving an explicit or implicit challenge to their safety, well-being or health (25, p.10).

Perrone (15, 26) highlighted that occupational violence in the healthcare setting remains mostly under researched. Some research has taken place in the ED, mental health and nursing home settings, and these areas have been shown to have higher rates of violence (27). There is still very little research investigating occupational violence and the impact of the NEAT implementation on the ICU. This lack of evidence means that the impact of new targets and this change to operational and clinical practice has yet to be systematically evaluated in the ICU setting. The lack of research on this change in practice creates the need to assess whether occupational violence was indeed actually increasing or whether the effect of such violence were being felt more intensively due to time constraints placed upon the ED by the NEAT implementation or other pressures. Healthcare facilities in Victoria, Australia and further afield must ensure that the workplace is safe and minimises risk to the health of its employees. In the State of Victoria, these responsibilities are governed by the Occupational Health and Safety Act, 2004 (p.1025). It is important to note that new standards have recently been developed in all Victorian hospitals in response to incidents of violence and aggression (22).

**Code Grey/Code Black activation definition**

In Australia, emergency codes in healthcare are standardised (28) and there is one emergency code used for aggressive behaviour, *Code Black*. In Victoria, however, another code was created as a recommendation from the Inquiry into Violence and Security Arrangements in Victorian Hospitals (19) in an attempt to standardise responses to violence further. A *Code Grey* is triggered by an actual in-hospital aggressive behaviour while a *Code Black* is triggered when a weapon is also present or
there is a serious threat to personal safety. The definition adopted for this study is slightly different in
that a Code Grey was defined as any incident where a person threatens injury to others or themselves.
This study was designed to investigate whether or not anecdotal concerns that patients with presenting
conditions that might precipitate challenging behaviours were being transferred to the ICU earlier due
to the constraints placed by the NEAT on the ED.

The aims in this study were to: (i) determine the incidence of aggressive and violent behaviours
exhibited by patients since the implementation of the NEAT in an ICU, (ii) identify the characteristics
of patients exhibiting such behaviours and (iii) determine the healthcare professionals most at risk of
being subjected to occupational violence in this setting.

Methods

Research design and setting

A before and after retrospective review of medical records over a 24-month period was conducted to
evaluate the impact of the NEAT on aggressive or violent behaviours of adult patients in the ICU.
This study was conducted in a 45-bed adult ICU, at a metropolitan tertiary hospital in Victoria,
Australia. Over 2,500 patients are admitted to this unit yearly with a variety of conditions and acuity.
On average, this ICU has 39 patients at any time, with a mix of ICU and High Dependency Unit
(HDU) patients. Full ethical approval was obtained from the study site and the University prior to the
start of data collection (116/14 and FHEC14/066).

Participants

Data from hospital medical records for a 24-month period between 2011 and 2013 were analysed. All
records of adult patients (over 18 years) admitted to the ICU from the ED for whom a Code Grey or
Code Black was activated in the ICU were included in the study, in keeping with the study’s aims. In
order to determine whether or not the implementation of the NEAT had an effect, patient records were sampled from 12 months before the NEAT implementation and 12 months after the implementation. A total number of 47 patient records were included, 18 pre and 29 post, out of a total of 823 records examined pre and 914 post NEAT implementation.

Data collection

There was no data collection tool suitable for this study. Data were therefore, collected using a purpose-designed tool. The tool was piloted before its use on medical records of three patients to evaluate its face and content validity. As all the information collected was objective or physiological patient data, this information was not open to interpretation and the tool was found suitable for use.

The data were collected from the ICU observation chart, the hospital’s electronic medical record system and the patient history. Code Grey/Code Black data were collected from the security database. Data collected included: Date and times of admission in the ICU and ED, gender, age, diagnosis, previous signs of violence or aggression whilst admitted in ED or ICU, were patients intubated in ED for agitation/aggression, time of intubation, sedation used for transfer to ICU, reason for admission to ICU, gender of staff involved in incident, type of staff involved, time and the type of incident.

Data analysis

The data were imported and analysed using SPSS 22.0 (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp). Descriptive statistics were used to report patients’ demographic characteristics. Inferential statistics, using Pearson’s chi-square and Fisher’s Exact test, were used to ascertain, which healthcare professionals were most at risk of occupational violence including differences in gender of healthcare professionals for verbal, physical, risk to self and risk to other incidents and their level of education. Data normality was checked prior to performing statistical testing. The data were examined for approximate normality by variable, using the Shapiro-Wilk, skewness and kurtosis statistics. The Shapiro-Wilk statistic test was significant, indicating approximate normality. In addition, the skewness and kurtosis z-values of ± 1.96 was also
supportive of approximate normality of the variables. A \( p \)-value of < 0.05 was considered statistically significant for the Shapiro-Wilk, skewness and kurtosis statistics.

Results

_Incidence of Code Grey/Code Black ‘activation’ pre and post NEAT implementation_

In the 12 months prior to the NEAT implementation timeframe the total percentage of Code Grey/Black activation that occurred was 2.19\% \((n = 18)\). The total percentage of Code Grey/Black activation that occurred in the specified timeframe post NEAT implementation was 3.17\% \((n = 29)\). There was a slight increase since the introduction of the NEAT of 0.98\% Code Grey/Code Black activation, or the equivalent of 11 more Code Grey/Code Black activation patients that were admitted from the ED to the ICU \((\chi^2(1) = 1.598, p = .206)\).

_Diagnosis associated with a behaviour causing occupational violence_

The most common type of admission from the ED to the ICU only for Code Grey/Code Black activation was for patients having taken a drug overdose, patients with isolated head trauma, patients admitted following a cardiac arrest, patients with a head trauma and multiple trauma, patients with multiple trauma but excluding a head trauma, seizures, alcohol misuse, asthma, bacterial pneumonia, congestive heart failure, drug overdose combined with alcohol as well as trauma, patients with a mechanical airway obstruction, pancreatitis, sepsis and burns. Figure 1, illustrates the number of Code Grey/Code Black activations associated with admission diagnosis for male patients, whilst Figure 2 is representing the same information for female patients.
Figure 1. Pie chart for male patients illustrating the number of Code Grey/Code Black activation patients associated with their different diagnosis, during the 24-month period.

Note. Other include bacterial pneumonia (1), drug overdose, alcohol and trauma (1), mechanical airway obstruction (1), pancreatitis (1), seizure (1), burns (1) and sepsis (1).
Figure 2. Pie chart for female patients illustrating the number of Code Grey/Code Black activation patients associated with their different diagnosis, during the 24-month period. Note: Other include asthma (1), cardiac arrest (1), congestive heart failure, (1) and a combination of a drug overdose and alcohol (1) and seizure (1).

Average age of patients for Code Grey/Code Black activation

The average age of male patients was 41.66 years of age compared to 31.25 years of age for female patients that activated a Code Grey/Code Black with male patients in the study being significantly older than female patients ($p = 0.024$).

ED length of stay and a comparison between pre and post NEAT means

The average ED length of stay pre the NEAT to admission in the ICU was 6.02 hours. Following the implementation of the NEAT the average ED length of stay reduced to 4.75 hours ($p = 0.325$).
**Previous history of violence and ED management**

A previous history of violent behaviour was identified for 13 patients. A total of 35 patients were intubated in the ED (pre = 14; post = 21). Of these, 22 were intubated in the ED for management of agitation/aggression (pre = 11; post = 11).

**Healthcare professionals at risk**

In order to determine whether there was a difference between healthcare professionals involved in a Code Grey/Code Black activation and their level of qualification, the Fisher’s Exact tests were performed due to assumption violations. As there were no incidents recorded for medical staff and Associate Nurse Managers (ANMs), only Registered Nurses (RNs), Critical Care Registered Nurses (CCRN) and Clinical Nurse Specialists (CNS) were tested. The tests showed that Code Grey/Code Black activation incidents were more likely to occur toward female RNs ($n = 14, 40.0\%$) compared to male RNs ($n = 4, 33.3\%$); male CCRNs ($n = 7, 58.3\%$) compared to female CCRNs ($n = 19, 54.3\%$) and male CNSs ($n = 1, 8.3\%$) compared to female CNSs ($n = 2, 5.7\%$). Full results are presented in Table 1.

**Table 1**

*Associations between healthcare professionals gender and education levels*

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Gender distribution (%)</th>
<th>$p$ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>RN</td>
<td>F 14 (40.00)</td>
<td>0.68</td>
</tr>
<tr>
<td></td>
<td>M 4 (33.3)</td>
<td></td>
</tr>
<tr>
<td>CCRN</td>
<td>F 19 (54.3)</td>
<td>0.81</td>
</tr>
<tr>
<td></td>
<td>M 7 (58.3)</td>
<td></td>
</tr>
<tr>
<td>CNS</td>
<td>F 2 (5.7)</td>
<td>0.76</td>
</tr>
<tr>
<td></td>
<td>M 1 (8.3)</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>F 35 (74.5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>M 12 (25.5)</td>
<td></td>
</tr>
</tbody>
</table>

*Note. F = Female; M = Male; RN = Registered Nurse; CCRN = Critical Care Registered Nurse and CNS = Clinical Nurse Specialist. RN refers to a person registered in Division 1 on the Register of Nurses of the Nursing and Midwifery Board of Australia established under the Health Practitioners Regulation National Law Act 2009 (EBA). CCRN are nurses that have a postgraduate qualification in critical care while the term CNS has been used to refer to nurses appointed to that grade with either a Critical Care certificate or at 12 months experience in the ICU(29)*
Types of incident

Fisher’s Exact tests were used to evaluate the type of incident that occurred toward healthcare professionals. These incidences included verbal violence, physical violence, a risk of harm to self and a risk of harm to others. The gender of patients involved in such incidents was also evaluated. Full results are presented in Table 2. In this instance, there is no comparison made between the levels of qualification for healthcare professionals, only the gender of staff affected. The tests revealed that verbal violence was more likely to occur toward male nursing staff (66.7%) than female nursing staff (20%). Male nursing staff were also more likely to be at a higher risk, of risk of harm to self (83.3%) and risk of harm to others (91.7%) than female nursing staff (77.1% and 71.8% respectively). Female nursing staff were more likely to be recipients of physical violence (45.7%) than their male nursing counterparts (25%). Full results are presented in Table 3.

Table 2

Types of incident involving other patients

<table>
<thead>
<tr>
<th>Type of Incident</th>
<th>Gender distribution (%)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal violence</td>
<td>F 4 (33.3) M 11 (31.4)</td>
<td>0.90</td>
</tr>
<tr>
<td>Physical violence</td>
<td>F 2 (16.7) M 17 (48.6)</td>
<td>0.04*</td>
</tr>
<tr>
<td>Risk of harm to Self</td>
<td>F 10 (83.3) M 27 (77.1)</td>
<td>0.65</td>
</tr>
<tr>
<td>Risk of harm to others</td>
<td>F 9 (75.0) M 30 (85.7)</td>
<td>0.41</td>
</tr>
<tr>
<td>Total</td>
<td>F 35 (74.5) M 12 (25.5)</td>
<td></td>
</tr>
</tbody>
</table>

Note. Pre and post incidents are combined and the total number of incidents analysed was 47 (18 pre and 29 post). More than one type of violence may have occurred in each incident and this is reflected in the percentages.
Table 3

Types of incident involving healthcare professionals

<table>
<thead>
<tr>
<th>Type of Incident</th>
<th>Gender distribution (%)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal violence</td>
<td>F 7 (20)</td>
<td>M 8 (66.7)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical violence</td>
<td>F 3 (45.7)</td>
<td>M 16 (25)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk of Harm to Self</td>
<td>F 27 (77.1)</td>
<td>M 10 (83.3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk of harm to others</td>
<td>F 28 (71.8)</td>
<td>M 11 (91.7)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>F 35 (74.5)</td>
<td>M 12 (25.5)</td>
</tr>
</tbody>
</table>

Note. * = statistically significant. Pre and post incidents are combined and the total number of incidents analysed was 47 (18 pre and 29 post). More than one type of violence may have occurred in each incident and this is reflected in the percentages.

Discussion

Incidence of Code Grey/Code Black activation compared to the pre and post NEAT

The data analysis showed that since the introduction of the NEAT there was a small but measurable (0.98%) increase in the call of Code Grey/Code Black activations in the ICU from the patients admitted from the ED. This study showed that 18 Code Grey/Code Black activations were triggered prior to the NEAT implementation and 29 post NEAT implementation, although this increase was not statistically significant. This equated to 11 more Code Grey/Code Black activations since the introduction of the NEAT. This rise in Code Grey/Code Black activations is consistent with the Australian report by Perrone (15), where occupational violence has been shown to have increased substantially in the previous decade and while this increase was measured since the implementation of the NEAT, it is not possible to determine whether or not it is a direct effect of the NEAT. The number of patients admitted to the ICU from the ED since the introduction of the NEAT also increased from 823 to 914 within the same timeframe.
Interestingly, was the finding that the healthcare professionals most at risk overall for occupational violence, were male CCRNs compared to female CCRNs. They were, however, close in percentage terms of risk. In contrast, female RNs were more likely to be at risk than their male counterparts. Male CNSs compared to female CNSs were only slightly more at risk. When examining all nurses in ICU, female nursing staff were however, more at risk compared to male nursing staff. Whether or not patients identified as violent were preferentially allocated to male CCRNs rather than female CCRNs while other patients were not preferentially allocated and still displayed episodes of violence/aggression cannot be determined. This gendered pattern of patient allocation, with patients identified at risk of disruptive behaviours allocated to male CCRNs, whilst other staff are allocated to patients with a lower anticipated risk could be an explanation but this cannot be implied from the analysis in the current study. In the mental health setting, Daffern (30) reported that gender of staff around rostering and patient allocation was often considered, with the belief that male nurses can manage and deter aggression better than their female counterpart. They showed, however, that the number of incidents and severity had no relationship with staff gender, thus questioning the value of gendered allocation. The value of gendered allocation in the ICU needs to be investigated as research on gendered allocation is very limited.

While it is likely that other aggressive or violent incidents may have occurred, they were not recorded. A known problem around occupational violence is the underreporting of such events and such underreporting is acknowledged by Alexander (9), Beech (11), Perrone (15), (31, 32). Results from the current study differ in comparison to Rippon (18) who reported that supervisors experienced more occupational violence than the general nursing staff. Results in the current study also do not support the findings from State of Victoria: Department of Human Services (19) who found that healthcare professionals with less experience and lower education levels were at a higher risk of occupational violence at work. The current study showed that CCRNs were more at risk of occupational violence compared to relatively junior RNs. This could be because risk for aggressive behaviour was identified early and more senior staff members allocated to the patient. This finding may also be related to the
higher percentage of CCRNs than the RN ratios that work in the ICU setting, or because of staff allocation, with patients seen as more difficult to be managed allocated to the more experienced staff. CNSs however, were not likely to be involved in Code Grey/Code Black activation incidents. This could be related to the nurse’s allocation, staff skill mix to meet the requirements of the ICU, with CNSs often in a leadership role and in a supernumerary capacity. The current study results support the findings of State of Victoria: Department of Human Services (19) in that nurses were more likely to encounter occupational violence than medical staff and other healthcare professionals (9, 28, 33).

Our study showed that verbal incidents were more likely to occur towards male nursing staff compared to female nursing staff (n =8, 66.7% vs. n =7, 20%). Female, rather than male nursing staff, were more likely to be involved in physical incidents of violence (n =3, 45.7%), and physical incidents were much more likely to be initiated by male patients rather than female patients, these results were statistically significant (n =17, 48.6%; p < .042). While Arnetz (34) showed that being a male healthcare staff member was a risk factor for violence, they did not differentiate between verbal and physical violence. The current study partially supports this finding, as more male staff were subjected to verbal violence while more female staff were subjected to physical violence.

Our study also showed that female nursing staff were more at risk of experiencing physical incidents (n =3, 45.7%). This result differs from other published studies, for example Arnetz et al, and Shepherd et al, (31, 35) showed the opposite, in that male nurses were more at risk than female nurses when it came to physical assaults/violent behaviour and threats. The current study does, however, concur with Rippon (18), State of Victoria: Department of Human Services (19) who showed that the risk to self and risk to others is similar and that risk of others was also highest followed by risk to self. Verbal abuse, however, in the State of Victoria: Department of Human Services (19) was more common than physical abuse, which is not supported by the current study findings. While the current study did find that physical abuse occurred more frequently, verbal abuse, toward male nursing staff was statistically significant.
Types of patients most likely to cause occupational violence

Drury (36) identified those patients who were diagnosed as having taken a drug overdose or having received a head trauma, were more likely to cause occupational violence. The current study also found that patients admitted with these pathologies were more likely to cause a Code Grey/Code Black activation. The study showed that female patients \((n = 8, 66.7\%)\) compared to male patients \((n = 10, 28.6\%)\) were more likely to cause a Code Grey/Code Black activation, \(p, < 0.20\). Of interest, there were no female patients diagnosed with an isolated head trauma. Male patients that presented with an isolated head trauma \((n = 9, 25.7\%)\) were likely to activate a Code Grey/Code Black, \(p, < 0.22\).

Limitations

Although we examined all Code Grey/Code Black activation episodes over a 2-year period, the sample size remains small and this could have some implications for generalisability. Of note, underreporting is an issue described with occupational violence, especially in the hospital setting (20, 37) and it may have also affected the results of this study. This in turn could have affected the number of incidents reported, which despite having increased did not show a statistical significance. Further retrospective studies are needed over a longer timespan to increase the sample size. Despite these limitations and the need to replicate these findings across other ICUs the findings presented in this study give an insight into the impact of the change in government targets on healthcare professionals and the incidence of occupational violence.

Recommendations for future practice

Specific recommendations to help reduce occupational violence in the ICU and to minimise the risk of harm to both patients and healthcare professionals are needed. Healthcare organisations must provide a safe environment for staff and also appropriate training for healthcare professionals on risk
assessment and de-escalation techniques. An annual professional update for current healthcare professionals specific to the ICU would be valuable. Training has been shown to be effective in reducing incidents, improving staff morale, and in optimising the response to incidents. These interventions have been shown to reduced serious incidents and minimised psychological harm to staff (11). Training in itself however, does not minimise the risk of occupational violence (19), it improves response time, improves behaviour management and in this way contributes to improvements in staff safety. Addressing the underlying causes that can trigger aggressive and violent behaviours in patients with a particular diagnosis would contribute to a decrease in the incidence of such behaviours. Whether or not this is possible at the ED and ICU level or requires some systemic societal interventions would need further investigation.

Another suggested potential strategy that might reduce risk would be to enable alerts on admission to hospital. Patients having a previous history of violent behaviour or recurrent episodes could be flagged. While this could have the potential to alert the staff, it could stigmatise certain patients and potentially influence staff behaviour towards them such as has been shown in other conditions such as infectious disease (38, 39). Not only such stigmatisation can be detrimental to patient care, it could also potentially make staff less vigilant to other warning signs. For example, patients not identified as violent might be afforded less vigilance. Rather we argue that ensuring that an evidence-based approach to practice, policies and procedures are utilised to identify any behaviour and respond to warning signs to prevent the need for a Code Grey/Code Black activation before it occurs in the ED and ICU, is the best approach to minimise the risk of harm to staff and patients. This will, in turn, enable the timely but safe transfer of patients to the appropriate care setting for ongoing treatment without this proving detrimental to staff and patient safety.
Conclusion

The introduction of benchmarks to measure performance in emergency care, such as the NEAT or Emergency Treatment Performance Measures, may alter care pathways in one care setting and will, most likely, have an impact on other areas of practice as the patient journey progresses. There may be some unintended consequences from the implementation of the NEAT for both patients and healthcare professionals. Consequences may include discharging and transferring patients earlier prior to the NEAT and thus this could have an impact on the quality of care. Delivering care in a different setting has implications for the healthcare professional who needs to adapt care practices and to learn how to respond to such care needs. At times, this includes challenging and dangerous behaviours and the priority for healthcare professionals is to keep themselves and their patients’ safe. The ICU is not immune to occupational violence. In this study, the incidence of violent behaviour, healthcare professionals subjected to these behaviours as well as the characteristics of the patients exhibiting such behaviours were described. We found that there was a minimal increase in Code Grey/Code Black activation in the ICU since the introduction of the NEAT. Overall, this challenges the assumption that the introduction of the NEAT is the reason for the increased violence that healthcare professionals experienced. Other interesting insights were uncovered and included the gendered nature of the violence and approaches to staff/patient allocation may also be significant for future research, for example, skill based allocation rather than gender based allocation. An important implication for clinical practice is the need for healthcare services to identify, investigate and evaluate strategies to minimise the risk of harm to patients and staff in all care settings. Leaders, managers and educators must ensure that healthcare professionals have the capability to assess and, respond appropriately to the actual and potential risk and experiences of occupational violence in an increasingly changing and complex workplace environment.
Funding

This work did not receive any funding.

Author contribution

AP, MC and SB all contributed to the study design. AP and SB completed data analysis, and all authors contributed to data interpretation and manuscript preparation. All authors approve the final manuscript for publication.
References

1. Schuh N. 4-hour rule - feasible or flawed? The NSW Doctor. 2012;March.


28. Roche M, Diers, D., Dufflied, C & Catling-Paull, C. Violence Toward Nurses, the
Work Environment, and Patient Outcomes. Journal of Nursing Scholarship. 2010;42(1):13-

29. Australian Nursing & Midwifery Federation (Victorian Branch). Nurses and
midwives (Victorian Public Health Sector) (Single Interest employers) Enterprise Agreement
http://www.anmfvic.asn.au/~media/files/ANMF/EBA 2016/Nurses-and-Midwives-

30. Daffern M, Mayer, M., & Martin, T. Staff gender ratio and aggression in a forensic

31. Shepherd M, & Lavender, T. Putting aggression into context: An investigation into
contextual factors influencing the rate of aggressive incidents in a psychiatric hospital. Journal
of Mental Health. 1999;8(2):159-70.


33. Chen KP, Ku YC, Yang HF. Violence in the nursing workplace - A descriptive

34. Arnetz JE, & Arnetz, B.B. Implementation and evaluation of a practical intervention
programme for dealing with violence towards health care workers. Journal of Advanced

35. Arnetz JE, Arnetz, B.B., Petterson, I-L. Violence in the nursing profession:
occupational and lifestyle risk factors in Swedish nurses. Work and Stress. 1996;10(2):119-
27. doi: 10.1080/02678379608256791.


Thank you for submitting the above protocol to the Faculty Human Ethics Committee (FHEC). Your material was forwarded to the FHEC Chair for consideration. Following evidence of a full review and subsequent final approval by the The Alfred HREC, the FHEC Chair agrees that the protocol complies with the National Health and Medical Research Council’s National Statement on Ethical Conduct in Human Research and is in accordance with La Trobe University’s Human Research Ethics Guidelines.

Endorsement is given for you to take part in this study in line with the conditions of final approval outlined by The Alfred HREC.

**Limit of Approval.** La Trobe FHEC endorsement is limited strictly to the research protocol as approved by The Alfred HREC.

**Variation to Project.** As a consequence of the previous condition, any subsequent modifications approved by The Alfred HREC for the project should be notified formally to the FHEC.

**Annual Progress Reports.** Copies of all progress reports submitted to The Alfred HREC are to be forwarded to the FHEC. Failure to submit a progress report will mean that endorsement for your involvement in this project will be rescinded. An audit related of your involvement in the study may be conducted by the FHEC at any time.

**Final Report.** A copy of the final report is to be forwarded to the FHEC within one month of it being submitted by The Alfred HREC.

If you have any queries related to the information above or require further clarifications, please fhechealth@latrobe.edu.au. Please quote FHEC application reference number FHEC14/066.

On behalf of the Faculty Human Ethics Committee, best wishes with your research!
Owen M Evans, PhD
Chair
Faculty Human Ethics Committee
Faculty of Health Sciences
ETHICS COMMITTEE CERTIFICATE OF APPROVAL

This is to certify that

Project No: 116/14

Project Title: Management of aggressive or violent patients in a metropolitan adult intensive care unit

Principal Researcher: Paul Ross

was considered for Low Risk Review and APPROVED on 7 April 2014

It is the Principal Researcher’s responsibility to ensure that all researchers associated with this project are aware of the conditions of approval and which documents have been approved.

The Principal Researcher is required to notify the Secretary of the Ethics Committee, via amendment or report, of

- Any significant change to the project and the reason for that change, including an indication of ethical implications (if any);
- Serious adverse effects on participants and the action taken to address those effects;
- Any other unforeseen events or unexpected developments that merit notification;
- The inability of the Principal Researcher to continue in that role, or any other change in research personnel involved in the project;
- A delay of more than 12 months in the commencement of the project; and,
- Termination or closure of the project.

Additionally, the Principal Researcher is required to submit

- A Final Report on completion of the project.

Approval covers the project as described in the application (including any modifications made prior to approval). Low Risk projects are subject to audit and ethical approval may be withdrawn if the project deviates from that proposed and approved.

SPECIAL CONDITIONS

None

SIGNED:

R Frew
Secretary, Ethics Committee

Please quote project number and title in all correspondence
**Author contribution**

AP, MC and SB all contributed to the study design. AP and SB completed data analysis, and all authors contributed to data interpretation and manuscript preparation. All authors approve the final manuscript for publication.