SafeWork NSW

Systems thinking for preventing work-related violence in NSW Hospitals

Systems thinking in incident investigations guidance

2023

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UniSC Australia

Centre for Human Factors and Sociotechnical Systems

Developed by the Centre for Human Factors and Sociotechnical Systems at UniSC for SafeWork NSW, in consultation with the Action Against Violence in NSW Hospitals Working Group.

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1. Background

Work-related violence (WRV) is an important health and safety issue in healthcare and especially within hospital environments. Research worldwide has shown that healthcare workers in hospitals are at high risk of WRV from patients / consumers, visitors and other healthcare workers (Mento et al., 2020; Nelson, 2014; World Health Organisation, 2020). Previous research has also shown that WRV is a complex and multi-factorial issue and has identified the need for systems thinking approaches to be taken (Salmon, Coventon & Read, 2021; 2022).

Incident investigation represents an important opportunity to learn from events that have resulted in negative outcomes and implement risk controls to prevent future occurrences. For some incidents of WRV, there is an obligation to investigate, but investigations of less severe incidents can also provide important learning opportunities.

The aim of this document is to introduce a systems thinking approach for the investigation of incidents of WRV in hospitals.

This guidance document is part of a suite of systems thinking resources for preventing WRV in hospitals. More information about the problem of WRV in hospitals, systems thinking approaches, and the suite of tools, is available in the Systems Thinking for Preventing Violence in NSW Hospitals Overview.

2. A systems thinking approach to incident investigations

As introduced in the Systems Thinking for Preventing Work-related Violence in NSW Hospitals Overview, systems thinking asserts that incidents and adverse events emerge from non-linear interactions between multiple components across entire complex systems (Leveson, 2004; Rasmussen, 1997). A key principle of the systems thinking approach is that it is not possible to understand or prevent incidents or adverse events by focusing on the actions of individuals. Instead, it is vital to examine the broader system and the interactions taking place across it.

Taking a systems thinking approach, investigators are encouraged to look ‘up and out’ to identify and address systemic contributory factors (Dekker, 2011), rather than focusing on blaming individuals for adverse events. As has long been acknowledged by safety scholars such as Reason (1997) and Rasmussen (1997), if only local fixes, such as blaming, retraining, or punishing individuals are applied, the systemic issues will remain, and incidents will continue to re-occur. By addressing systemic factors such as policy, resourcing, and culture, more wide-reaching and sustainable improvements can be realised.

Various principles aligned to a systems thinking approach to investigations have been identified in the literature:

- Building and maintaining a culture of learning and trust.
- Acknowledging bias during investigations.
- Acknowledging there is a shared responsibility for safety across the system.
- Acknowledging contributory factors and their interactions.
- Understanding and acknowledging protective factors.
- Developing appropriate risk controls.
- Providing feedback to workers on investigation outcomes and actions taken.

Each of these principles will be introduced in turn, along with their practical implications for incident investigations.

A culture of learning and trust

The concept of a just culture is well known in the safety profession. A just culture is a facet of organisational culture whereby workers can trust that they will be treated fairly following an adverse event and will not be punished for their decisions or actions, unless these crossed a line into unacceptable behaviours (i.e., gross negligence, wilful violations or destructive actions; Reason, 1997). The just culture approach arose within the safety critical industries as a response to blame cultures where workers would be disciplined for actions which contributed to an adverse event, even in cases where their intentions were good, their decisions or actions were influenced by broader factors outside of their control, and in circumstances where other workers would have made a similar decision.

From an investigation's perspective, it is important that those involved in an incident trust that the investigation team and the wider organisation are focused on learning why the event occurred. Where trust is maintained, workers will be more likely to share information freely. If workers believe the purpose is to find someone to blame, they are unlikely to participate fully and may hide information from investigators, hindering the opportunity for the organisation to learn.

The concept of a just culture is commonly acknowledged in relation to patient safety. For example, it is a guiding principle of the NSW Health Patient Safety and Clinical Quality Program (NSW Health, 2005), which states that "individuals are treated fairly and are not blamed for the failures of the system". However, principles of a just culture are not yet as clearly incorporated within the workplace health and safety context; where it is a healthcare worker who has been harmed. The idea of a just culture remains relevant, however, as the decisions and actions of workers could contribute to the worker themselves or others in the workplace to be at risk. Applying the notion of a just culture within the WRV area specifically, we may see cases where blame and sanctions are appropriate, such as where potential criminal behaviour is involved. It is anticipated that the police would deal with this aspect of the investigation, and the internal investigation would apply just culture principles to the decisions and actions of the healthcare workers involved.

A more recent conceptualisation of the just culture approach is the notion of a restorative just culture (Dekker & Breakey, 2016). This view of just culture, based on principles of restorative justice (Zehr & Gohar, 2002), focuses on how different parties have been harmed and how these harms can be addressed. Those harmed can include both the first victim (i.e., the person injured) and second victims (i.e., workers whose actions contributed to the event, colleagues / bystanders, the organisation, and the wider community). Restorative justice involves listening to those who have been harmed and focusing on what actions can be taken to repair trust and the relationships that have been damaged. This may involve giving a voice to victims, providing victim support (psychological first aid, debriefings, follow-ups), providing opportunities for showing remorse, and applying participatory approaches to identifying appropriate actions for trust restoration (Dekker & Breakey, 2016).

Summary

Investigators and investigation teams can **support a culture of learning and trust** by:

- Conducting the investigation on the basis that the purpose is to learn from the event, not to blame or punish individuals involved.
- Avoiding the language of blame when writing findings and reports (e.g., "committed an error", "failed to", "violated", etc.). Instead, using neutral or factual terms (e.g., decision, action, event, consequence).
- Focusing less on individual decisions and actions, or individual factors, and more on the factors across the system that contributed to the event. Investigations should focus on how the system failed and identify interventions that increase the system's capacity to prevent and manage WRV.
- Considering what restorative actions may be needed following an incident.

Acknowledging Bias

Various biases can impact an incident investigation, and lead investigators and investigation teams down the path of a focus on individual responsibility or blame, rather than on identifying system-wide contributory factors. The biases discussed here are normal and common attributes of our thinking processes, but without acknowledging them, we can fall into the trap of focusing on 'human error' (Read et al., 2021).

The first bias to consider is outcome bias. This bias involves the tendency to attribute individual blame more readily where the consequences of an adverse event are more severe (Henriksen & Kaplan 2003; Dekker 2011). Defensive attribution theory (Shaver 1970) proposes that more blame is attributed in cases of high severity, as opposed to low severity adverse events, as a high severity event evokes our self-protective defences, motivating us to find evidence to support a scenario where the same thing would not have happened had we been operating under those circumstances.

A second bias to consider is hindsight bias, which plays an important role in safety investigations (Dekker 2006). Post-accident, it can be easy to fall into the trap of viewing events and conditions leading up to the event as appearing to be linear and somewhat obvious. Whereas, of course, the people involved in the incident did not have the benefit of knowing what the outcome of their decisions or actions would be. In combination, these biases help to strengthen the beliefs of investigators and others who review accidents to "persuade themselves… that they would never have been so thoughtless or reckless" (Hudson 2014, p. 760).

Two key concepts are related to hindsight bias. One is the concept of local rationality. We generally expect that people behave in an objectively rational manner and investigations can focus on comparing behaviour to an objective standard; or what the worker should have done in the situation. The idea of local rationality (or bounded rationality; Simon, 1957) questions this assumption by proposing that the rationality of decisions or actions must be defined from the local perspective of the person acting in the particular situation, taking into account their individual knowledge, goals and the environmental constraints under which they are operating under at that moment (Gibson 1979; Woods & Cook, 1999). Another is the concept of counterfactual reasoning. This is where we think about what might have happened, had another course of action been taken. In incident investigations, this could take the form of assuming that had the worker performed or omitted a particular action (such as in compliance with procedures), the negative outcomes would not have occurred. However, there is no way for us to confirm that this would have, in fact, been the case.

To avoid hindsight bias, it is important for investigators and investigation teams to focus not on what a worker should have done, but on why their actions made sense to them at the time (Dekker, 2006). This will provide a stronger basis for identifying the factors across the system that influenced their behaviour.

Summary

Investigators and investigation teams can **address bias** by:

- Rejecting simplistic explanations of the causes of adverse events.
- Acknowledging that rationality is bounded.
- Acknowledging when outcome bias and hindsight bias could influence the investigation and using strategies to avoid their influence on the investigation.

A shared responsibility for safety

Given that systems thinking models of adverse events assert that safety and accidents are emergent properties arising from interactions across complex sociotechnical systems, it can be extrapolated that safety is, therefore, a shared responsibility across that system. This shared responsibility for safety spans all levels of work systems, beyond the so-called 'sharp-end' and up to and including organisations, regulatory bodies, government, and international organisations.

For example, Rasmussen's (1997) Risk Management Framework represents work systems as comprising various hierarchical levels (e.g., government, regulatory bodies, companies, company management, staff, and work), each of which contain actors (individuals, organisations or technologies) who share the responsibility for performance and safety. The ActorMap and AcciMap techniques can be used to describe and analyse adverse events in line with Rasmussen's Risk Management Framework. These techniques were developed to provide a systems thinking accident analysis method, but they can also be useful to support the investigation process. The ActorMap identifies the actors (individuals and organisations) that share the responsibility for safety. The AcciMap identifies the contributory factors associated with an adverse event.

During an investigation, an ActorMap can be used to identify who may have relevant information to contribute to an investigation. A generic ActorMap is shown in Figure 1. This should be adapted to represent the actors in the particular work situation within which the incident occurred. An example ActorMap for WRV in hospital settings in NSW is shown in Figure 2.

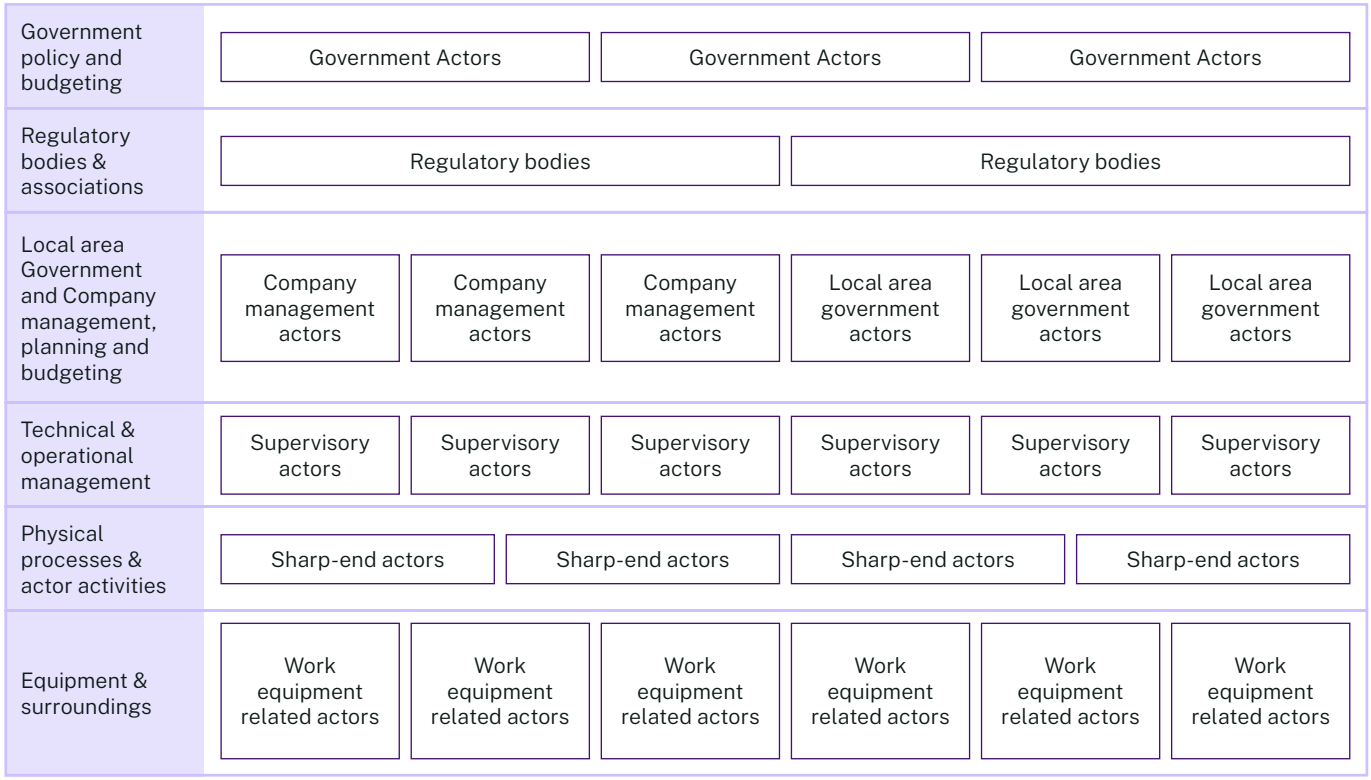

Figure 1. Generic ActorMap

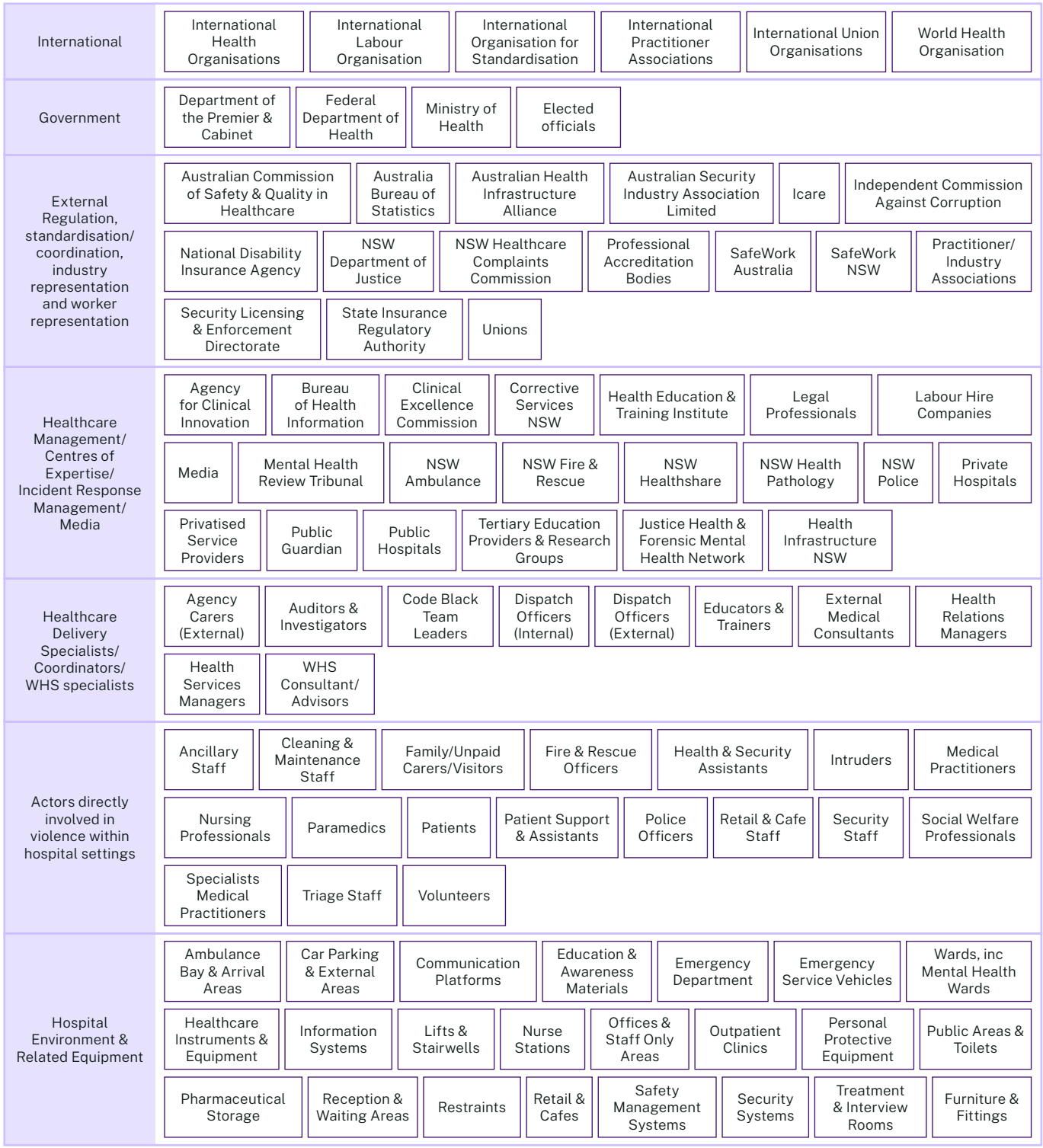

Figure 2. ActorMap for WRV in hospital settings in NSW (adapted from Salmon, Coventon & Read, 2021)

Summary

Investigators and investigation teams can **consider the shared responsibility for safety** by:

- Avoiding gathering evidence and information only from those directly involved in an incident ('sharp-end' actors such as workers, patients, visitors).
- Using an ActorMap representation to identify who may have relevant information to contribute to an investigation.

Understanding contributory factors across the system and their interactions

In addition to the ActorMap, the AcciMap representation can be used to identify the contributory factors to adverse events, and causal relationships between the factors. These contributory factors generally represent the decisions and actions of the actors across the system identified within the ActorMap. A generic AcciMap is shown in Figure 3.

During an investigation, an AcciMap can be used to identify and map contributory factors across a system. For example, early in the investigation it may be identified that a worker was fatigued, and that this state resulted in them making a non-optimal decision under the circumstances. Instead of stopping the investigation at the identification of fatigue, the AcciMap process would prompt investigators to consider fatigue management approaches within the healthcare organisation – such as rostering (e.g., shift lengths, breaks, circadian effects, days worked in a row, pattern of day vs night shifts), management of overtime, on-call rosters and secondary employment, and work demands (e.g., high cognitive load or monotony). In turn, reasons for issues identified in fatigue management systems can be traced further into the system, potentially related to staffing availability, rostering principles, understanding of fatigue risks within the organisation or broader influences from regulators, governments, unions, professional associations and even international organisations. This will likely involve engaging with a wider range of stakeholders than may traditionally be involved in an investigation, supported by an ActorMap.

Using an AcciMap can therefore assist investigators and investigatory teams to identify where additional evidence gathering may be needed. For example, additional investigation and evidence gathering may be needed where no factors are identified at certain levels of the system or where links are missing in the causal chain between key factors and the adverse event. Shading or annotations can also be used to indicate the strength of evidence or factors for which further evidence is required. At the conclusion of an investigation, the final AcciMap can be used to communicate a summary of the incident to others.

Generally, developing an AcciMap involves (Salmon et al., 2022):

- Refining the level descriptors to fit the work system in which the adverse event occurred. This may involve adding levels or modifying the wording of the level descriptors to better fit the context. For example, the levels in Figure 3 could be changed to match the hospital system levels identified in previous research (i.e., International; Government; External regulation, standardisation/coordination, industry representation and worker representation; Healthcare management / centres of expertise / incident response management / Media; Healthcare delivery specialists / Coordinators / WHS specialists; Actors directly involved in violence within hospital settings; Hospital environment & related equipment).
- Mapping out the flow of events from left to right at the Actors directly involved in violence within hospital settings level. This essentially provides an incident timeline, including key decisions and actions that occurred around the time of the incident. Descriptions should be short and factual, and based on what actually occurred as opposed to what should have occurred according to rules or procedures. Where possible, use neutral language (e.g., decision, action, event) rather than terms that could be considered to blame individuals (e.g., “committed an error”, “failed to”, “violated”, etc.). Remember to focus on why people’s actions made sense to them at the time.
- Taking data gathered during the investigation to identify factors across other system levels that contributed to the event. It is recommended that investigators consider or search for contributory factors across all levels of the system hierarchy and also to look for contributory factors associated with all of the actors and organisations identified in the ActorMap. Organisations may have their own definition for what is considered a contributory factor; if not, a commonly used definition is shown in Box 1.
- Placing the identified contributory factors on the AcciMap. For each contributory factor, identify which actor it is associated with, develop an appropriate description, and place at the corresponding level on the AcciMap diagram (the level should correspond to where the actor was placed in the ActorMap). Contributory factor descriptions should use neutral language and try to avoid focussing on failure where possible. For example, where training has been identified as a contributory factor, a suitable description would be ‘Training’ (rather than ‘Inadequate training’).

Box 1

A contributory factor is one that:
“if it had not occurred or existed at the relevant time, then either the occurrence would probably not have occurred, adverse consequences associated with the occurrence would probably not have occurred or have been as serious, or another contributory safety factor would probably not have occurred or existed”

(Australian Transport Safety Bureau, 2008)

- Identifying relationships between contributory factors. A relationship should be recorded if one contributory factor created, influenced, or occurred in sequence with another contributory factor. When a relationship is identified, the analyst draws an arrow showing the direction of influence.
- The final steps involve reviewing the AcciMap to ensure that all relevant contributory factors and relationships are included.

If the organisation uses an incident management system, the factors from the AcciMap can be classified into relevant contributory factors lists and recorded allowing for aggregate analysis across incidents.

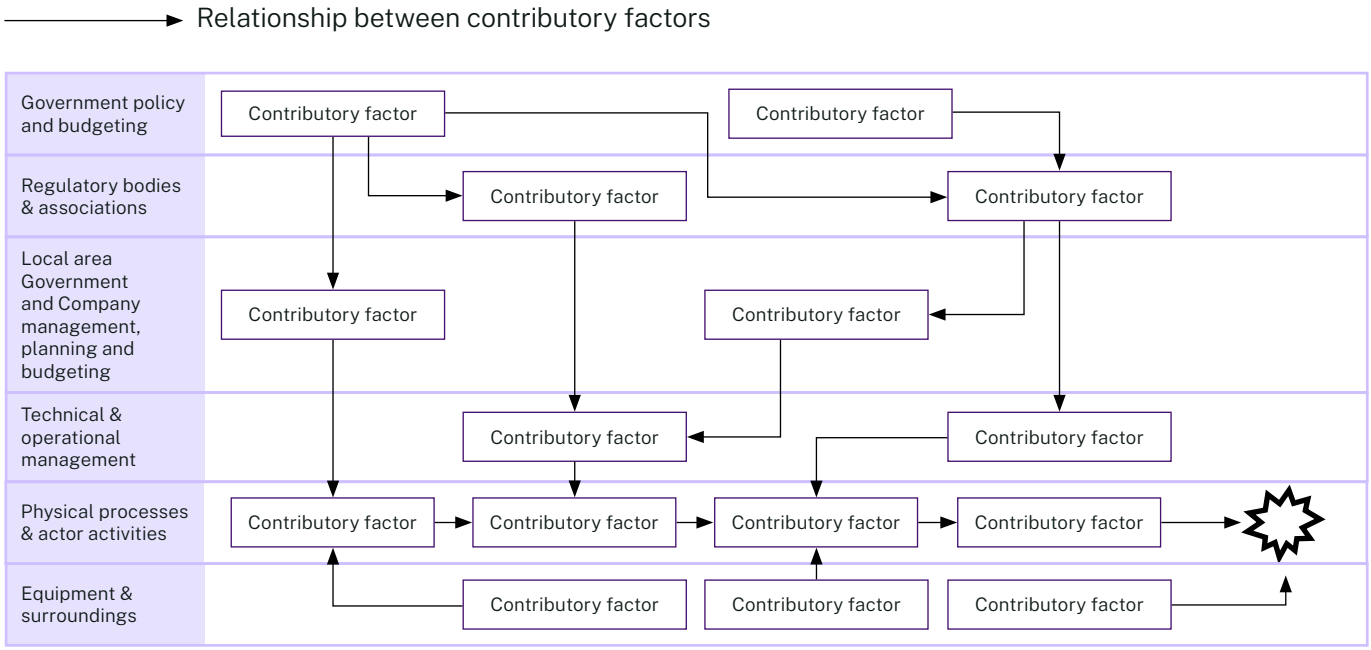

Figure 3. Generic AcciMap

Summary

Investigators and investigation teams can **understand contributory factors and their interactions** by:

- Avoiding focusing only on the decisions of actions of those directly involved in an incident ('sharp-end' actors such as workers, patients, visitors).
- Using AcciMap to identify the contributory factors to the event and the relationships between them, and to communicate the findings of the investigation.

Understanding and acknowledging protective factors

Modern safety science is shifting from a focus only on the negative (i.e., "what went wrong"), with it becoming more important to also consider "what went right" (Hollnagel, 2014; Woods & Cook, 2002). During investigations, as well as identifying contributory factors, there is an opportunity to identify and acknowledge protective factors being decisions, actions and / or conditions across a system that prevented or mitigated damage, injury, or loss (Thoroman et al., 2019). This enables actions to be identified that further support and maintain these protective factors within the system. It also assists in recognising those in the system whose decisions and actions helped to prevent a more serious outcome.

Summary

Investigators and investigation teams can **understand and acknowledge protective factors** by:

- Identifying where things went right and identifying strategies to further support and maintain these protective factors within the system.

Developing appropriate risk controls

Investigations commonly result in recommendations, countermeasures or risk controls focused on those directly involved in the event (e.g., reprimanding individuals, re-training) or the addition of new rules and procedures. Such 'quick fixes' (Dekker, 2006) generally fail to address the systemic issues that represent the real underlying causes. When we do not work on the 'hard fixes', the systemic issues remain in place and will contribute to future incidents. Reason (2000) provided the analogy of swatting mosquitoes versus draining swamps. We can either swat each individual mosquito as they arise (i.e., punish or re-train individuals), or drain the swamps within which the mosquitoes are breeding (i.e., address the systemic factors).

Risk controls arising from investigations should focus on the systemic issues identified in the AcciMap. They should be developed in consultation with key stakeholders to ensure feasibility, practicality and buy-in from those who will be responsible for implementation. Hard fixes are by nature difficult and may require significant investment or long timeframes for implementation. Therefore, investigation recommendations may be stated less in terms of short-term, direct actions within the workplace, but more focussed on changes to organisational policies, procedures, initiatives, or the need to collaborate with and influence external organisations for sector-wide changes.

In addition to risk controls to improve safety, restorative actions should be considered, in terms of how first and second victims could be supported to restore damaged trust and relationships.

Summary

Investigators and investigation teams can **develop appropriate risk controls** by:

- Avoiding controls representing 'quick fixes'; instead working towards the 'hard fixes' at the system level.
- Involving key stakeholders in the development of controls.
- Considering the need for restorative actions.

Feedback to workers

Once an investigation has been completed, it is important that the findings are provided back to those involved, and updates on the implementation of the risk controls recommended are given. This gives confidence to those involved that the incident is being taken seriously and that their input is contributing to tangible workplace safety improvements.

It would also be desirable, where there are no confidentiality concerns, that the findings be communicated across the work unit and the wider organisation, for example, using the AcciMap representation. By using neutral language, emphasising the shared responsibility and multiple contributory factors involved, acknowledging protective factors, and focusing risk controls on 'hard fixes' at the system level, workers across the organisation will understand that investigations are not focused on blame; increasing the likelihood of full participation in future investigations and other safety initiatives.

Summary

Investigators and investigation teams can **support feedback to workers** by:

- Ensuring those involved in an investigation receive information about the investigation findings and updates on the implementation of recommended risk controls.
- Communicating investigation findings to workers across the organisation.

3. Case studies

Three case studies are used to demonstrate the systems thinking principles applied to hypothetical WRV investigations. The case studies are intended to cover different types of WRV and incidents of differing severity, including some extreme examples that may not be commonplace.

Case study 1

A female dementia patient (85 years old) displays violence and aggression towards a final year student nurse while they are attempting to shower the patient, who is on a ward recovering from a hip replacement. It was the first time the student nurse had assisted a dementia patient with bathing, and they had received no specific training in dementia patient care. Initially, it was planned that the student nurse would shadow a registered nurse first. However, the ward had become busy due to two staff members calling in sick that morning. While an agency nurse had been arranged, they were not due to arrive for a couple of hours. The student nurse, in an effort to help, decided to initiate the task by herself, given that the patient had appeared friendly in previous bedside interactions and had also mentioned feeling uncomfortable from not having bathed recently. However, while helping the patient to undress, the patient became aggressive and began shouting, slapping the nurse on the arms and legs. A ward nurse heard the patient from the corridor, intervened to assist and eventually calmed the patient. First aid was offered by the ward nurse, but the student informed she was not physically hurt, just very shaken. The ward nurse also informed the nurse unit manager (NUM) of the incident during a tea break. The student was reluctant to formally report the incident out of a sense of embarrassment and feared that she might be in trouble for taking the initiative rather than waiting for the registered nurse to be available as planned. As aggression was likely unintentional, the student believed nothing could be done to prevent it. The NUM encouraged the student to report the incident, prompting a unit level review of the incident. The NUM follows up with the student nurse a few days later.

Systems thinking principles for investigations	Application to case study
Build a culture of learning and trust	• The NUM encourages the student nurse to report the incident, explaining that it is important that the unit, and wider hospital, learn from the incident. • The NUM meets with the student nurse to debrief. The NUM acknowledges that she had good intentions, explains that there will not be negative outcomes for her from an investigation and shares some of their own negative experiences with patients, focusing on the learnings these experiences provided. • The NUM encourages the student nurse to seek assistance from the hospital or university Employee Assistance Program / counselling service. • The NUM checks that the patient, their family / visitors, the responding nurse, and other nurses on the ward have not been emotionally affected by the incident – referring staff to the Employee Assistance Program. • The hospital's senior management has recently endorsed a new WRV prevention policy that encourages reporting and review of violent incidents, with a commitment to provide NUMs with additional time to complete reviews and a dedicated budget for the implementation of recommendations.
Acknowledging bias	• The NUM is initially frustrated about the incident, given the student nurse was supposed to wait for a registered nurse to be available, especially on such a busy day when staff do not have time to be dealing with incidents. However, they recognise this frustration and acknowledge that: – The student nurse was not aware of the risks of violence in this situation and thought she was assisting the team on a busy shift (local rationality). – While according to the placement agreement, the student was supposed to be supervised in their activities and should have asked for assistance (counterfactual reasoning), these agreements are often not reinforced once the student enters the workplace and are formal documents that are typically not well understood by students (local rationality).

Systems thinking principles for investigations	Application to case study
A shared responsibility for safety	• The NUM speaks to various people involved and additional stakeholders to gather information for the review, including: – The student nurse. – The registered nurse who responded to the incident. – Other nurses on ward at the time. – The patient and their family (in this case, the patient did not remember the incident). – The university placement coordinator. – Hospital management.
Understanding contributory factors across the system and their interactions	• The NUM identifies initial contributory factors as: – The student nurse commencing the task without a registered nurse / senior staff member present. – The patient was experiencing cognitive impairment (dementia). – The patient likely felt uncomfortable / fearful in an unfamiliar environment and having an unfamiliar person undressing them. • However, the NUM does not stop the review at these immediate factors and, using AcciMap, they identify the following broader contributory factors to the incident and how the factors interacted (see Figure 4): – The patient had previously demonstrated some aggressive behaviour in their usual residential care environment, but this information had not been provided to the hospital on admission. – Questions regarding risk factors for potential violence were not asked on admission. – The ward did not have processes to manage patients with dementia who may have a risk of deterioration leading to aggression. – The ward did not have usual staff numbers, and were awaiting replacement staff. – A safety huddle was not held at shift commencement. – The student nurse was not adequately supervised while on shift. – The student nurse did not feel comfortable interrupting busy senior staff to ask questions. – Planned shadowing of the bathing task was not able to be implemented. – Agency staff were not always available immediately. – The student nurse had not received training or been briefed about the risks of aggression and violence posed by patients with dementia. – University student placement risk assessments included risks associated with WRV, but these were mostly focused on intentional violence and did not consider violence due to clinical presentation (i.e., dementia, delirium, mental health diagnoses). – Processes to ensure that students understand placement agreements were inadequate. • The organisation has an electronic incident management system that provides for the input of contributory factors. The NUM classifies the factors identified in the AcciMap into the contributory factor list to support future aggregate analyses of factors contributing to WRV.
Understanding and acknowledging protective factors	• The NUM identifies and acknowledges the quick response from the ward nurse who intervened, de-escalated the situation, and offered first aid.

Systems thinking principles for investigations	Application to case study
Developing appropriate risk controls	• The NUM identifies the following immediate risk controls: – Clinical review of the patient for contributing medical factors (e.g., UTI, confusion related to anaesthetic / other medications), to inform treatment changes if required. – Review of the patient behaviour management plan. – Review of the location of care for the patient, including room set up, proximity to the nurses' station and access to duress buttons. – Communication of the incident and changes to treatment / management plans at safety huddles. – Consideration of flagging of patient aggression risk in electronic medical records system (where consider that there is an ongoing risk of aggression). • The NUM also identifies a set of risk controls to address the systemic issues identified. These include: – Ensuring clear responsibility for the supervision of student nurses. – Creating a culture whereby all staff are comfortable to ask questions, regardless of seniority and busyness. – Ward inductions to include aggression management and emergency procedures. – Ward inductions for students to include an overview of the student placement agreement, with the student encouraged to ask questions. – Creating an organisational culture whereby safety huddles are conducted regardless of staffing levels and other pressures. – Working with the university placement coordinator to improve university training to include: de-escalation techniques, dynamic risk assessment principles, and principles of dementia care. – Processes for wards to manage patients with dementia who may have a risk of deterioration leading to aggression, including handover of information from other facilities (e.g., aged care) and consideration of risk factors on admission – Explore the integration of systems enabling patient records to be directly shared across hospitals / agencies (e.g., ambulance, police, aged care facilities).
Feedback to workers	• On completion of the review, the NUM summarises the findings and recommendations for a poster placed in the tearoom, provides a short summary for the weekly department staff newsletter, and gives a verbal update at team meetings. During feedback sessions, the NUM also emphasises the protective factor identified and thanks the ward nurse for their assistance. • Hospital management provides feedback to the NUM about the recommendations that will be implemented or considered further. While the recommendation regarding the integration of electronic medical records is not immediately able to be actioned, senior management explains that the findings of this review have been incorporated into a wider review of data sharing amongst healthcare facilities, which is considering the legal, privacy and feasibility aspects. • The NUM relays updates from hospital management on the implementation of the recommended controls at team meetings.

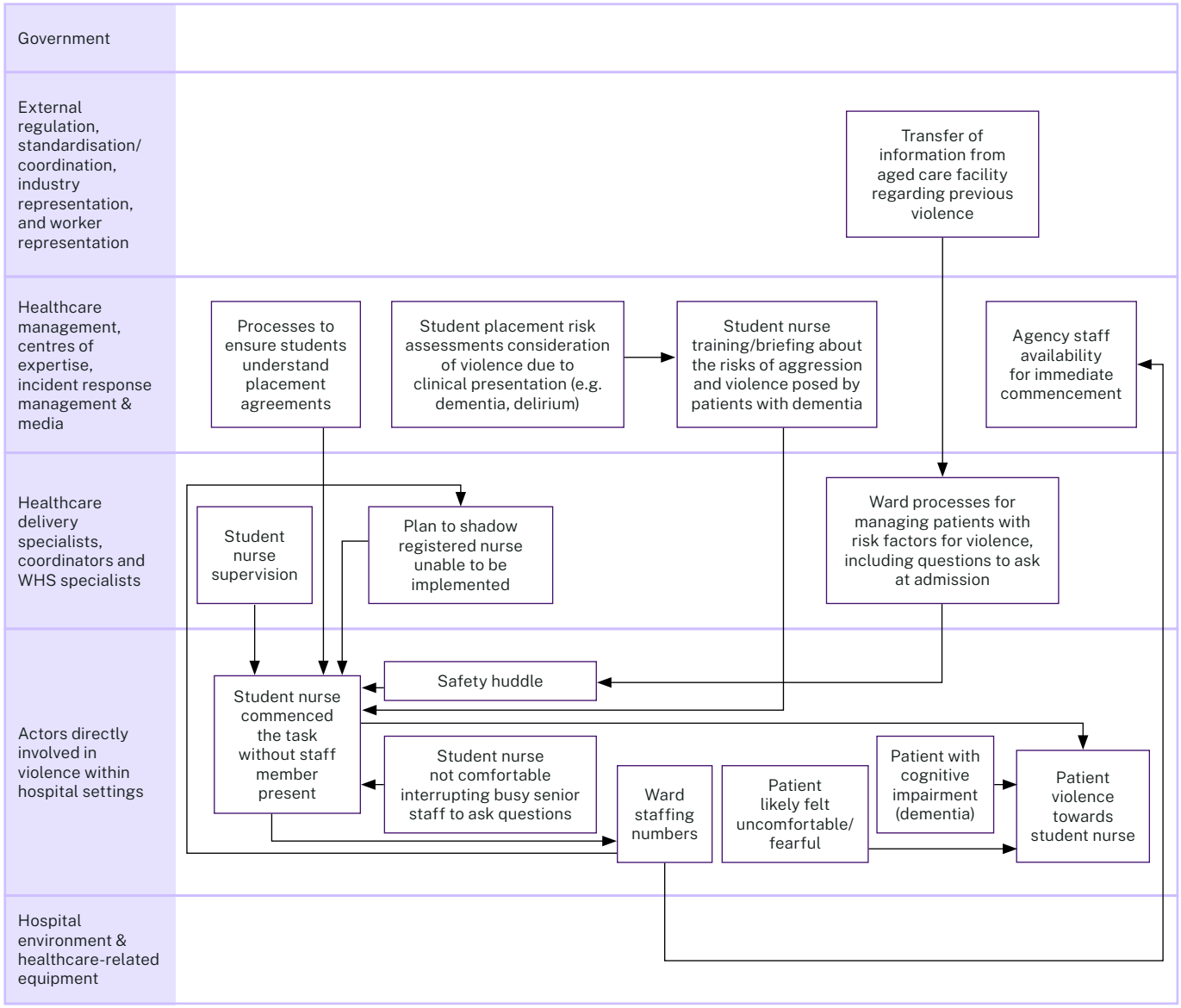

Figure 4. AcciMap for Case Study 1

Case study 2

On a quiet Monday evening in a rural hospital emergency department (ED), a man in his late 50s is brought in by his wife and a friend. He has lacerations to one of his legs and says he was attacked by a neighbour's dog. As it is after-hours and the automated sliding doors providing entry to the ED are locked, the patient presses the call button, and after he has explained the situation, the triage nurse releases the lock on the sliding doors. At this stage, she has seen the patient and his wife, but not the friend who had been finishing his cigarette a few steps away, outside of her line of sight. As the group enters the ED, the nurse notices that the friend appears to be intoxicated, although he is friendly, saying good evening and thanking her for letting them in so that the patient can be treated.

Apart from the group, the waiting room is empty, and the triage nurse immediately calls for a doctor to attend the ED to look over the man's wounds in the treatment room. The doctor appears shortly afterwards and is discussing some paperwork with the triage nurse. The patient looks at the triage nurse and remarks, in a 'joking' tone "oh, I guess I drew the short straw tonight, don't you guys have a doctor who speaks proper English?". The nurse ignores him. The young doctor is uncomfortable, but once the paperwork is finalised, he approaches the patient and politely asks him to join him in the adjoining treatment room. Around the same time, the friend takes a packet of cigarettes from his backpack, takes out a cigarette and begins to light it. The doctor turns to him and tells him that he cannot smoke in the ED – pointing to a nearby no smoking sign. He explains that he would need to go outside to smoke. At this stage the patient's friend stands up and walks quickly towards the doctor, shoving him and saying, "don't think you can tell me what I can and can't do. I wish people like you would just go back to where you came from". The doctor begins to retreat backwards but has no clear escape route. The doctor asks the visitor to settle down and he is pushed to the floor and kicked in the face. He tries to get up and defend himself, but the visitor produces a knife and threatens to stab him. As she sees the doctor being pushed the nurse activates her personal duress alarm and other staff members arrive quickly to assist as the hospital is not busy. By this time, the group are leaving the premises, with the visitor swearing, punching at walls, and attempting to push over a vending machine on his way out. Police were called and conducted a sweep of the hospital grounds to ensure the group was no longer present. When given details about the patient, one officer recognised the name as someone they had previously prosecuted for violent crimes. They are pretty sure they know the identity of the friend as well. It further emerged that the patient had been flagged for violence following an incident at a metropolitan hospital six months prior. The flag detail identified a previous incident where the patient and a visitor had become violent towards staff, with police being called to attend.

Although not required by policy, the CEO calls for a full investigation of the incident with a review team established to identify the contributory factors and learnings.

Systems thinking principles for investigations	Application to case study
Build a culture of trust and learning	• The CEO personally contacts the doctor and triage nurse in the days following the incident to check on their welfare and recovery and let them know a full review is underway with a focus on learning from the incident. • A review team is set up, reporting to the CEO / Board. • Managers of the doctor and triage nurse encourage them to seek assistance from the hospital's Employee Assistance Program / counselling service; they also reinforce that the review will be focused on learning not on blame. • The review terms of reference clearly state a focus on the organisational and systemic failings that enabled it to occur.

Systems thinking principles for investigations	Application to case study
Acknowledging bias	• Review team meetings follow a standard agenda with an agenda item dedicated to discussing potential biases. Throughout the investigation they acknowledge various potential biases and work to ensure they do not negatively impact the review: – The doctor had previously experienced racist comments, but these had not escalated to physical violence (local rationality). – The triage nurse was used to dealing with intoxicated individuals and witnessing casual racism but did not expect the escalation (local rationality). – None of the parties were aware of the previous violent and criminal history of the patient and visitor (local rationality, hindsight bias). – Policies required the doctor / triage nurse to use duress alarms immediately on initial signs of aggression (counterfactual reasoning). – At times members of the team expressed surprise that the triage nurse did not use the duress alarm immediately, given a team was available. This prompted a discussion of hindsight and outcome bias. The team acknowledged that it may have been viewed by other staff members as an over-reaction to be called on every matter of verbal aggression or racism experienced at the hospital. The team reflected on the difficulties for staff to make decisions regarding escalation, particularly when they have not received specific training.
A shared responsibility for safety	• The review team speak to various people involved and additional stakeholders to gather information for the review, including: – The doctor. – The triage nurse. – Other hospital and admin staff who attended. – Other workers within the ED to understand common practice. – The attending police officers. – Hospital management.
Understanding contributory factors across the system and their interactions	• The review team identifies initial contributory factors as: – Visitor intoxication. – Patient and visitor racist attitudes. – Doctor and triage nurse do not take immediate action (i.e., use duress alarms). – The doctor was not wearing a personal duress alarm at the time of the incident. • However, the review team do not stop the review at these immediate factors and, using AcciMap, identifies the following broader contributory factors to the incident and how the factors interacted (see Figure 5): – While policies required the use of duress alarms on initial signs of aggression, the triage nurse explained that she did not call it initially due to not expecting the situation to escalate so quickly. – Although the patient had history of violence, due to a lack of communication between hospital record systems and police systems, the triage nurse and staff had no notification of prior violent behaviour & criminal status. – The doctor and triage nurse had not received violence and aggression management training. – Rostering did not ensure that the ED team had a staff mix that included those who had received violence and aggression management training. – The doctor did not have a clear escape route from the ED. – The facility is over 40 years old, and while current hospital design standards require multiple egress routes, this requirement did not apply to existing buildings. – There was a culture within the hospital of acceptance of verbal aggression. – The review team noted that there were social norms influencing the scenario, specifically levels of societal racism and broader societal acceptance of racism / casual racism.

Systems thinking principles for investigations	Application to case study
Understanding and acknowledging protective factors	• The review team identifies and acknowledges the use of the duress alarm by the triage nurse, and the quick response from other staff members. • They also acknowledge the quick response from local police, who supported staff to feel safe by checking that the group had left the hospital grounds.
Developing appropriate risk controls	• The review team identifies the following immediate risk controls: – Patient to be flagged for aggression. – A letter posted to patient outlining behavioural expectations and banning them from the premises. – Reminders regarding wearing of, and use of duress alarms included in safety huddles across all hospital departments. • The review team identify the following risk controls to address the systemic issues identified: – Creating a culture of non-acceptance of racism and verbal aggression through modelling by senior management and supporting / rewarding staff who enforce zero tolerance policies. – Implementation of a system to ensure rostering takes account of skill mix, including violence and aggression management training / code black response training. – Request to senior management for resources to fast-track violence and aggression management training and understanding / calling a code black response training for all staff. – Review of design standards to determine if they should apply to existing buildings, as well as new facilities. – Longer-term project set up to explore linking of hospital alert systems and potentially with external agency systems such as police and ambulance. – Longer-term project set up to discuss with professional bodies and universities the incorporation of violence and aggression management and code black response training into initial education and accreditation for healthcare workers. – On speaking with the doctor following the incident about what the organisation could do, he explained that he would like his family to feel safe and welcomed in the community. This leads to engagement with government organisations and local organisations (e.g., schools, sports clubs) as part of a community anti-racism campaign. This demonstrates an organisational commitment to addressing the broader issue of racism in the community and helps to re-build trust between the doctor, the organisation, and the wider community.
Feedback to workers	• On completion of the investigation the review team summarises the findings and recommendations for a poster placed in the tearoom, provides a short summary for the weekly department staff newsletter, and gives verbal update at team meetings. The summary includes reference to the protective factors identified. • The Board review the recommendations and feedback is provided to staff regarding those that will be implemented or considered further. • Department managers are asked to provide updates to staff on the implementation of the controls at team meetings.

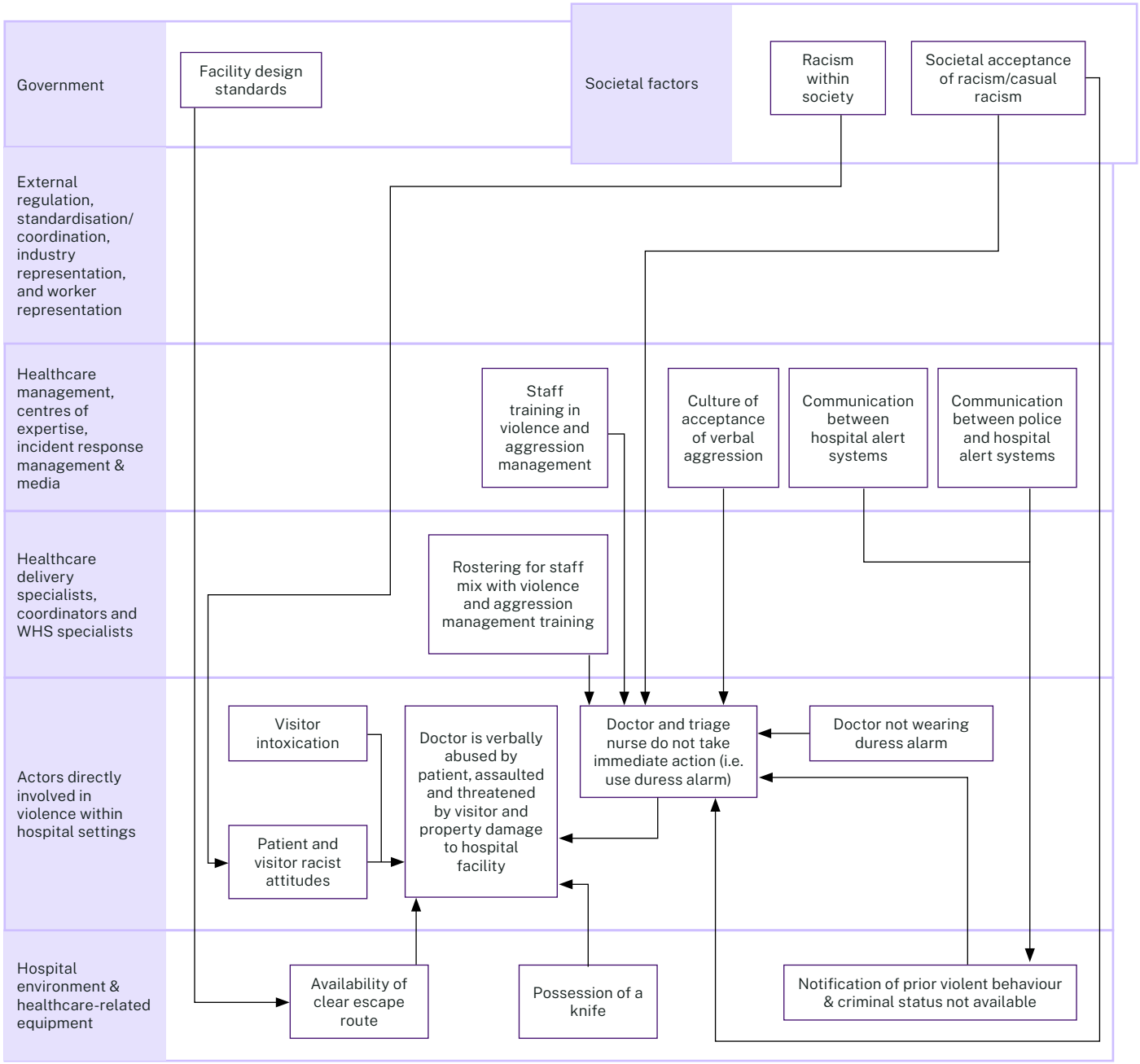

Figure 5. AcciMap for Case Study 2

Case study 3

A 19-year-old woman is voluntarily admitted to an acute mental health ward for the first time. The ward was originally designed as a renal ward within the hospital; however, a minimal refurbishment was completed 5 years prior to extend the number of mental health beds available. The patient was previously being treated for depression by her GP. Prior to her admission, the patient has attempted suicide. Subsequently, a short admission was arranged with the aim of devising a comprehensive care package.

The patient is taken into an initial assessment room by a Mental Health Liaison Nurse. However, due to the extremely busy ward, the nurse had not had time to read the patient's history thoroughly and overlooked information provided in background notes from the GP regarding indications of auditory hallucinations, potentially brought about by a history of illicit drug use. After speaking about the circumstances leading up to her suicide attempt, the patient becomes increasingly distressed, and starts demanding to see a doctor. After being told that the doctor is on their way and would arrive in about 5 minutes, the patient becomes agitated and verbally aggressive towards the nurse.

The patient demands medication; then proceeds to run towards the assessment room door shouting. In the process, the patient pushes past the nurse, knocking her into a table, resulting in bruising on her hip. The nurse tries to reach the duress alarm to call for assistance, however, she is blocked by the patient trying to exit the door. The nurse speaks calmly to the patient, using de-escalation techniques she has learned in her training, such as validating the patient's feelings of frustration, anger, and fear. The patient slowly begins to calm down and returns to sit on the treatment room chair, crying and saying she just wants to get help. The treating doctor arrives soon afterwards.

Systems thinking principles for investigations	Application to case study
Build a culture of learning and trust	• The nurse explains to the treating doctor that she is embarrassed that she had not checked the notes more comprehensively and would rather not report the incident as no harm came from it. However, the doctor encourages the nurse to report the incident, explaining that is important that the unit, and the wider hospital, learns from it. • The supervising NUM for the mental health unit meets with the nurse and the treating doctor to debrief. The doctor acknowledges that there were other factors on the ward that day (i.e., staff shortages, workload) that led to the nurse not having the time to read the patient history comprehensively. • The NUM explains that there will not be negative outcomes for the nurse from an investigation. • The NUM encourages the nurse to seek assistance from the hospital Employee Assistance Program / counselling service. • The NUM asks the treating doctor to check in with the patient around the incident, their condition and behaviour, how it has affected them, and whether additional care is required to address this.
Acknowledging bias	• The NUM initially finds it surprising that the nurse did not comprehensively read the file, given they are usually diligent and are well-aware of the risks of violence within a mental health setting. • The NUM recognises the circumstances that led up to the incident and acknowledges that: – Due to staff shortages and workload, the nurse did not have the time to thoroughly read all the information within the patient's history. – The nurse did not consider a need to have additional measures in place, such as an additional staff member or choosing a room with clear visibility from other staff.

Systems thinking principles for investigations	Application to case study
A shared responsibility for safety	• The NUM speaks to various people involved and additional stakeholders to gather information for the review, including: – The patient and their family. – The nurse. – The treating doctor. – Admin team on shift. – Other ward staff. – Facility managers and hospital management.
Understanding contributory factors across the system and their interactions	• The NUM identifies initial contributory factors as: – The nurse assessing a patient without thoroughly checking their health history and information. – The GPs notes on patient history were not flagged by the admin team prior to the initial assessment. – As the nurse did not expect the patient to become violent, they did not ensure they were seated on the same side of the room as the duress alarm. • However, the NUM does not stop the review at these immediate factors and, using AcciMap, they identify the following broader contributory factors to the incident and how the factors interacted (see Figure 6): – The ward was unusually busy, with staff under time pressure to address the needs of patients. – The nurse was under pressure to attend to the needs of multiple patients. – The nurse attempted to access the fixed duress alarm in the treatment room, but access was blocked by the patient. – The design of the room meant that only one fixed duress alarm was provided. – Policies did not require the use of personal duress alarms for staff. – While the treatment room opened up onto a busy corridor with staff regularly walking past, only a small glass window was provided, and thus there was not clear line of sight for other staff to recognise the situation was escalating. – The mental health ward was earmarked for refurbishment in the previous year, but the construction was running behind schedule and thus changes had not been implemented. – Given that a refurbishment was due to occur to bring the facility up to current standards, risk assessments had been delayed for the previous two years, resulting in temporary measures not being introduced (i.e., personal duress alarms).
Understanding and acknowledging protective factors	• The NUM identifies and acknowledges the nurse's successful use of de-escalation techniques learned in a recent training course.

Systems thinking principles for investigations	Application to case study
Developing appropriate risk controls	• The NUM identifies the following immediate risk controls: – Development of a patient behaviour management plan, incorporating the full clinical history. – Consideration of location of care for the patient during their in-patient stay (including proximity to staff and access to duress buttons). – Consider flagging of patient aggression risk in electronic medical records system (where consider that there is an ongoing risk of aggression). – Follow up with nurse and other workers to ensure they are safe and feel supported, referring to services such as the Employee Assistance Program. – The NUM gathers staff to conduct a risk assessment of the current design of the ward to identify additional temporary controls to maintain safety. • The NUM also identifies a set of risk controls to address the systemic issues identified: – Policies requiring personal duress alarms to be worn by all staff working in the ward, in addition to installation of appropriate infrastructure to support this. – Updates to risk assessment policies requiring assessments on a regular basis regardless of planned improvements / initiatives. – Consideration of staffing levels or the potential to share staff across other hospital units to manage during busy periods. • Recognising that the nurse demonstrated excellent skills in applying de-escalation techniques, the NUM also asks them to be involved in future training and mentoring in de-escalation for new staff.
Feedback to workers	• On completion of the review the NUM summarises the findings and recommendations for a poster placed in the tearoom, provides a short summary for the weekly department staff newsletter, and gives verbal update at team meetings. During feedback sessions, the NUM also emphasises the protective factors identified, such as the successful use of de-escalation techniques by the nurse which resolved the situation. • Hospital management provide feedback to the NUM about the recommendations that will be implemented or considered further. • The NUM relays updates from hospital management on the implementation of the controls at team meetings.

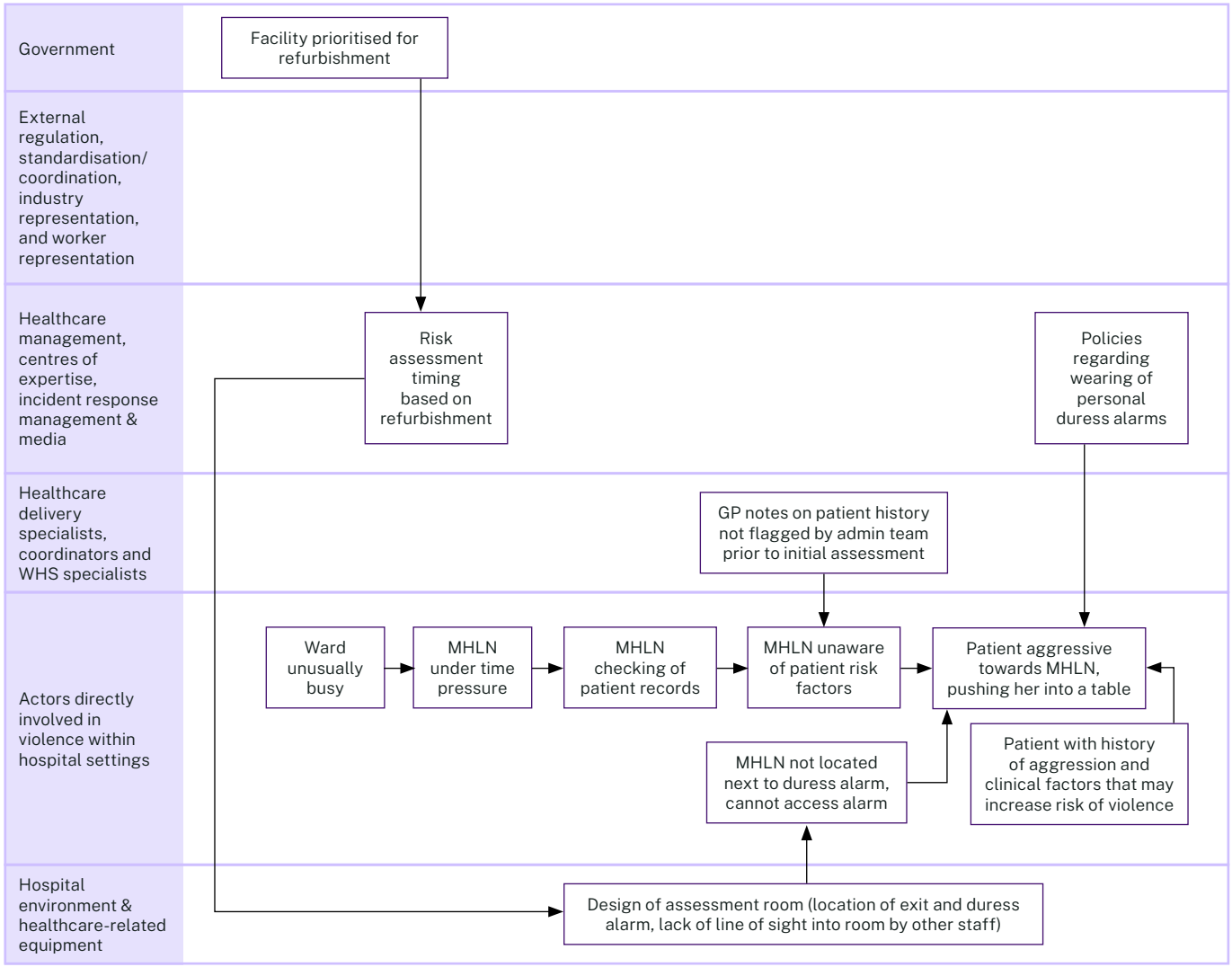

Figure 6. AcciMap for Case Study 3

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