HOW CAN WE IMPROVE ESCALATION OF PATIENT DETERIORATION IN THE HOSPITAL SETTING?

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EXECUTIVE SUMMARY

A large number of hospital deaths in Australia are preventable. These deaths are often preceded by abnormalities in vital signs and other observations. Early identification of deterioration can assist in providing earlier and lower level intervention to patients. However, despite national standards for the recognition and response to deterioration, there is evidence that warning signs of patient deterioration are not always recognised or followed up. Failure to escalate deterioration accounts for a proportion of claims made to the Victorian Managed Insurance Authority, and is a priority area for improvement.

The aim of this project is to develop and test behavioural strategies to improve escalation of patient deterioration in the hospital setting.

We conducted a rapid review of the literature identifying 21 reviews. We also consulted with a panel of 13 Victorian community members and conducted practice interviews with intensive care clinicians, researchers and nurses. A summary of the main themes identified across the three studies is presented in the table below.

Table 1. Summary of main themes identified across the three studies

<table>
<thead>
<tr>
<th>Theme</th>
<th>Literature review</th>
<th>Practice review</th>
<th>Citizen panel</th>
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<tbody>
<tr>
<td><strong>Interventions</strong></td>
<td></td>
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<tr>
<td>Education / simulation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Encouraging patient and family role in recognition and escalation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Revision of current escalation protocols including activation criteria</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td><strong>Factors influencing escalation of care</strong></td>
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<tr>
<td>Hierarchy</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Fear of criticism</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Confidence</td>
<td>✓</td>
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<tr>
<td>Competence /experience/knowledge</td>
<td>✓</td>
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<td>Workload</td>
<td>✓</td>
<td>✓</td>
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<td>Use of electronic devices</td>
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<td>Adequacy of activation criteria</td>
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<tr>
<td>Culture surrounding escalation</td>
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AIMS

The aim of this project is to develop and test a behavioural strategy to improve escalation of deterioration in the hospital setting. The methods used to address this aim are:

- Application of BehaviourWorks Australia’s established three-phase method of applying behaviour change through exploration of the problem, deep dive to understand behavioural drivers and context and application of findings to a trial of a behaviour change strategy;
- A structured approach to evidence review and stakeholder dialogue, the Forum method\(^1\,^2\)

Table 2 outlines this approach. This briefing document contains findings from the exploration phase. The Briefing Document is directed towards groups with expertise in or experience in recognising and escalating patient deterioration within the hospital setting. These include clinicians, health service organisations, consumers and consumer representatives, researchers, the Victorian Department of Health and Human Services (DHHS) and the Victorian Managed Insurance Authority (VMIA). Details of the research methods employed in producing this briefing document can be found in Appendix 1.

Table 2. Project overview

<table>
<thead>
<tr>
<th>EXPLORATION</th>
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<tbody>
<tr>
<td>Rapid review of evidence into barriers and facilitators to escalation of patient deterioration and the effectiveness of strategies to improve escalation of patient deterioration that are feasible and sustainable in the hospital setting.</td>
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<tr>
<td>Examination of current practice and key issues in escalation of patient deterioration in the hospital setting in Victoria through:</td>
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<td>- A day-long citizen panel in which members of the Victorian community discuss key challenges in escalating patient deterioration; and</td>
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<td>- One-on-one interviews with clinicians, researchers and other experts in the field.</td>
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<td>Convene a representative stakeholder group to:</td>
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<td>- Gain a shared understanding of key issues in recognition and escalation of patient deterioration in the hospital setting</td>
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<tr>
<td>- Identify and prioritise behavioural interventions to improve escalation of patient deterioration in the hospital setting that are feasible, can be trialled within 6 months and are scaleable across various Victorian health settings and services;</td>
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<tr>
<td>- Determine broad characteristics of a high-priority trial for further development.</td>
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<tr>
<td>A day-long structured stakeholder dialogue will be held on November 26, 2018. The dialogue aims to connect the information from this briefing document with the people who can make change happen and deliberate upon this shared challenge. Collective problem solving through multi-stakeholder dialogue has been used around the world to address healthcare policy and practice challenges. Participants consistently demonstrate high satisfaction and high intention to act upon evidence discussed in dialogues. Specific questions for deliberation at this stakeholder dialogue are presented at the end of this briefing document.</td>
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<th>APPLICATION</th>
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<td>The BehaviourWorks research team, in collaboration with VMIA, DHHS and participating health services, will develop, implement and evaluate a pilot trial of a high-priority intervention in a Victorian hospital setting. The pilot trial is anticipated to be conducted in the first half of 2019.</td>
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INTRODUCTION

In 2016, it was estimated that 27,000 Australian deaths were potentially preventable, many of which occur in hospital. Although this figure is trending downwards, there is still capacity to better identify and act upon early warning signs of patient deterioration. Preventable in-hospital deaths are often preceded by serious vital sign abnormalities. For example, cardiac arrest is often preceded by clinical deterioration in respiratory or mental function. Early identification of such abnormalities can assist in providing earlier and lower level intervention to patients, whilst also potentially reducing the occurrence of adverse events and in-hospital mortality. Conversely, delayed recognition and escalation of deterioration can result in severe consequences. For example, in patients with septic shock, mortality increases by eight per cent for every hour that antibiotic administration is delayed.

While significant improvements have been made in recognising and escalating deterioration in recent years, there is still evidence to suggest that the warning signs of patient deterioration are not always recognised or followed-up by nursing and medical staff. Failure to escalate deterioration accounts for a significant proportion of claims made to the Victorian Managed Insurance Authority, and is subsequently a priority area for improvement.

The Australian Commission for Safety and Quality in Health Care developed a Standard for Recognising and Responding to Acute Deterioration. This was underpinned by the National Consensus Statement which outlines the essential elements for recognising and responding to acute deterioration. This standard aims to ensure that acute physical, mental or cognitive deterioration is recognised promptly and that appropriate action is taken, also identifying the systems and skills required for this to occur. The standard emphasises that deterioration can occur at any point when a patient is receiving health care. The three criterion are outlined below.

![Figure 1. National Standard for Recognising and Responding to Acute Deterioration Criterion.](image-url)
In line with the Australian standards, acute care hospitals have established organisation-wide systems to promote early recognition and response to deterioration. These generally contain two separate arms, namely recognition and response arms. While these vary between hospitals, they may contain some or all of the elements outlined below.

**Figure 2. Components of escalation protocols.**

### Recognition

Documentation of vital signs using observation charts assists health professionals to identify potential deterioration\(^{11-13}\). However, there is a lack of consensus on the optimal monitoring frequency and differences in resource availability between hospitals\(^{12}\). For example, some sites may only monitor patients for 24 hours after admission or post-operatively\(^{14,15}\). It has been suggested that the reliance on intermittent and potentially incomplete vital signs measurements may not be sufficient to cater for the changing profiles of general ward patients\(^{12,16-19}\). Both continuous and intermittent vital signs monitoring have been associated with improvements in critical care use and length of hospital stay\(^{20}\) and also increased activation of rapid response systems\(^{12}\). While the introduction of continuous monitoring may provide a more accurate reflection of patients’ physiological state and may detect deterioration in general ward patients earlier than intermittent monitoring, there is insufficient evidence to recommend the routine use of continuous monitoring in general ward patients\(^{12,20}\).

Early warning systems (EWS) are often used to prompt calls for senior assistance with changes in vital signs or other parameters. Also referred to as track and trigger systems, they rely on regular measurement of observations, with predetermined responses when certain thresholds are reached\(^{21}\). These thresholds form calling criteria for activating clinical review or rapid response teams. While many different systems are in use both nationally and internationally, single parameter, single response systems, in which rapid response system activation is based on changes in one vital sign, are most common in Australia\(^{22}\). EWS have been consistently found to predict adverse events (including cardiac arrest and mortality) \(^{19,23,24}\). They also improve staff ability to recognise and respond to patient deterioration\(^{13,25}\) and increase calls to Rapid Response Teams (RRTs)\(^{24}\). There is some evidence to suggest that the introduction of EWS is associated with reductions in cardiac arrests and in-hospital mortality\(^{19}\), however the evidence on the impact of EWS on improved patient outcomes is generally mixed\(^{11,13,23}\). It has been suggested that EWS may be too oversensitive and unSpecific\(^{26,27}\), and their utility relies on the use of clinical judgement and timely response\(^{19}\). Furthermore, there is variability in the calling thresholds (especially for respiratory and heart rate and wording of various worry/concern criteria, and inclusion of additional calling criteria) and inclusion of additional calling.
criteria (e.g. uncontrolled pain, response to treatment and timeliness of medical review) across Australia which could influence how early patient deterioration is detected and responded to\textsuperscript{28}. Variations in thresholds will by definition influence the number of patients that meet the calling criteria, subsequently impacting the clinical review and RRT workload\textsuperscript{28}.

Patients and their families can also play a role in the recognition and escalation of deterioration. Health professionals have expressed concerns that patient and family-led escalation would overwhelm resources, undermine staff roles and be used for non-emergent reasons. However, there is evidence to the contrary. Outcomes of patient and family-led escalation have included increased transfers to higher level care\textsuperscript{29-31}, decreases in number of non-ICU adverse events\textsuperscript{29,31}, increased median number of days to cardiac arrest\textsuperscript{29} and decreased mortality\textsuperscript{31}. Furthermore, patient and family-led escalation does not appear to overwhelm staff resources\textsuperscript{29-31}. It has been reported that patients and families worry that escalating deterioration would have a negative effect on their relationships with ward staff, however patients and families who have escalated care have reported high levels of satisfaction with the system and reassurance that the system was available\textsuperscript{30-32}.

Despite these positive findings, there is room to improve patient and family-led escalation processes. Evidence suggests that patient and family-led concerns may require a different skill set to resolve than those provided by trained health professionals\textsuperscript{30}.

**Response**

In line with Australian standards, at least 60% of ICU-equipped Australian hospitals have a RRT, also referred to as a medical emergency team (MET)\textsuperscript{33}. The RRT/MET concept was developed in Sydney and teams are generally activated when a patient meets pre-determined calling criteria, which is usually based on vital signs, laboratory results or nurse or clinician concern about a patient's condition\textsuperscript{34}. In response to the Australian standards, the 'Between the Flags' initiative was introduced NSW public hospitals\textsuperscript{35}. It was designed to intervene in patient deterioration using two types of intervention; clinical review and rapid response. Many Australian hospitals have subsequently implemented two-stage emergency response systems. RRTs are associated with reductions in cardiac arrest rates and in-hospital mortality rates\textsuperscript{36-41}. However, there is conflicting evidence on the requirements of the team composition\textsuperscript{36,37}. While there is variation in the composition of RRTs, many Australian teams are physician-led and often include ICU fellows and ICU nurses\textsuperscript{28}. However, in many cases the team does not include staff with advanced airway skills and ICU specialists may not regularly attend. It has been suggested that improving resourcing of RRTs and providing further training in the management of deterioration may improve team ability to manage deteriorating patients\textsuperscript{28}. 
WHAT DOES THE EVIDENCE SAY?
RAPID REVIEW FINDINGS

A rapid literature review was undertaken to identify, evaluate and synthesise published literature investigating barriers and facilitators to escalation of patient deterioration and interventions to improve escalation of patient deterioration in the hospital setting.

Rapid reviews are an emerging method of efficiently synthesizing research evidence in health policy and other settings where a broad overview of research evidence is required in a short timeframe. Unlike traditional systematic literature reviews (which take 12-18 months), rapid reviews focus on synthesised research evidence and/or high-quality or recent primary studies. Caution needs to be applied when interpreting rapid review findings, as more comprehensive review approaches may elucidate further information and insights, which would influence review interpretation and conclusions. Therefore, systematic reviews remain the definitive method of literature review, and we recommend systematic reviews be undertaken whenever possible.

The literature search yielded a total of 6803 citations, after the removal of duplicates. Following screening, 13 systematic reviews and 8 narrative reviews were eligible for inclusion in the rapid review. Quality appraisal of the systematic reviews using the recognised AMSTAR 2 tool showed that 10 out of 13 systematic reviews were of reasonable to high quality, satisfying a majority of applicable quality criteria. This means that reasonable confidence can be placed in the findings of these reviews. Appendix 2 presents full details of the AMSTAR 2 review.

Collectively, the systematic and narrative reviews cover the following areas:

- Interventions to improve recognition and response to deterioration
  - Education/Simulation
  - Patient and family-led escalation
- Factors that influence recognition and response to deterioration

A synthesis of these reviews is presented below.

INTERVENTIONS

Education / simulation

Four systematic reviews and two narrative reviews evaluated the impact of education and/or simulation on recognition and response to patient deterioration.

Educational programs for health professionals improved identification and management of deterioration. They have been found to increase knowledge, performance for staff, and staff confidence. There is also evidence that staff education can reduce length of stay and adverse events for patients. However, one review found that the impact on patient outcomes was uncertain and another reported that several interventions, such as a training program on modified early warning scores (MEWS) and an assessment of MEWS-trained nurses’ responses to deterioration, had little or no effect on nurses’ detection and escalation of clinical deterioration. Yet, there was some evidence that education could improve organisational systems such as RRTs.

High-fidelity simulation, aimed at improving ability to recognise and respond to deterioration, with student nurses and registered nurses has been shown to improve knowledge and performance, with some indications that there were also improvements in confidence. Session characteristics...
have an impact on knowledge, with face-to-face simulation superior to web-based programs and the length of the session being more important than the number of clinical scenarios presented\textsuperscript{45}. However, simulation studies with nurses provided limited evidence on ability to recognise and respond to deterioration\textsuperscript{56}.

**Handover tools**

A review by Hogan et al. found that studies evaluating standardised handover tools have reported improvements in the transfer of information, however the impact on patient outcomes remains uncertain\textsuperscript{40}.

**Patient and family-led escalation**

Patients and families may notice signs of deterioration that health professionals don’t pick up on. Three systematic reviews\textsuperscript{29,30,32} and one narrative review\textsuperscript{31} evaluated interventions that encourage patient and family involvement in the recognition of and response to patient deterioration. In some circumstances, patients or families could directly activate the rapid response team, but more often they used an indirect pathway whereby patients or family alert staff who then review suitability for escalation. Patients and families often received education about escalation processes as well as verbal and visual reminders (i.e. posters and leaflets), however it was noted that little focus was placed on how patients and relatives might detect deterioration\textsuperscript{29} whereas ‘concern’ was always included as a criterion for escalation.

**FACTORS THAT INFLUENCE RECOGNITION AND RESPONSE TO DETERIORATION BY HEALTH PROFESSIONALS**

Six systematic reviews and five narrative reviews investigated factors influencing recognition and response to deterioration; these are summarised in the table below.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Description</th>
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<tbody>
<tr>
<td>Confidence</td>
<td>Lack of confidence acted as a <strong>barrier</strong> for junior staff to escalate deterioration in the absence of physiological changes, i.e. subjective, subtle and/or gradual clinical changes\textsuperscript{27,48,49,52}. Conversely, overconfidence was also cited as a <strong>barrier</strong> as health professionals believed that management of deterioration was within their capacity. This was more common among doctors\textsuperscript{27,47,49}.</td>
</tr>
<tr>
<td>Competence/Experience/Knowledge</td>
<td>Inexperience and lack of knowledge acted as <strong>barriers</strong> for junior doctors and nursing staff to interpret vital signs correctly and junior doctors also reported having insufficient skills to respond to the complexity and progression of deterioration\textsuperscript{26,48,50,52,54}. It wasn’t always clear to staff when they should call for advice\textsuperscript{48,49}. However, accessible supervision of junior staff can <strong>facilitate</strong> the averting of errors and delays\textsuperscript{52}. Ongoing education and skills training <strong>improves</strong> staff ability to recognise and respond to deterioration\textsuperscript{26,27,50,53,55}.</td>
</tr>
<tr>
<td>Workload</td>
<td>High workload has been shown to contribute to <strong>failure</strong> to identify deterioration due to lack of time to complete adequate observations\textsuperscript{26,27,47,49,54,55}. Frequent interruptions also contributed to <strong>poor documentation</strong> of observations and <strong>lack of follow-up</strong> on potential deterioration\textsuperscript{47,54,55}.</td>
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<tr>
<td>Delays in finding the correct staff</td>
<td>Senior staff were often <strong>difficult to contact</strong> or physically locate when escalating deterioration\textsuperscript{47}.</td>
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<td><strong>Use of electronic devices</strong></td>
<td>While the use of electronic observation devices can increase the ability to recognise timely deterioration, negative effects are also reported. They reduce the amount of interaction staff have with patients, thus decreasing their familiarity with patients and likelihood of noticing subtle changes.</td>
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<tr>
<td><strong>Sensitivity/specificity of activation criteria</strong></td>
<td>Some escalation activation criteria have been criticised for being oversensitive to patients with chronic disease and non-specific for different medical conditions. While it is possible to tailor criteria to specific patient groups, ward nurses reported delays and reluctance from senior staff to do so.</td>
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<tr>
<td><strong>Established protocols and processes</strong></td>
<td>Having established patient deterioration guidelines facilitated escalation processes, particularly communication between staff.</td>
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<tr>
<td><strong>Culture surrounding escalation</strong></td>
<td>Health professionals cited fear of hierarchy as a barrier to escalating deterioration. They felt intimidated by senior colleagues and were worried about being criticised or looking stupid. Nurses reported waiting for larger changes in patient condition, speaking to more experienced nurses and gathering more clinical data in order to justify their activations, which acted as a barrier to timely escalation of deterioration. Effective responses to deterioration were facilitated by supportive inter-professional relationships with people who will respond to their concerns without criticism. Leadership, teamwork and communication assist in providing a coordinated response to deterioration.</td>
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**WHAT DO CITIZENS THINK?**

During a citizen panel convened on the 31st of October 2018, 13 socio-demographically diverse Victorian community members were provided with a plain language version of this briefing document. One-third of the participants represented the general population, one-third had deteriorated while in hospital and one-third had cared for someone whose condition deteriorated while in hospital. During the deliberation about the problem, citizens were asked to share what they view as the key challenges in recognising and escalating deterioration within the hospital setting. Citizens were asked to reflect on their own experiences and those of family and friends to consider the underlying challenges and inform the types of interventions which may be appropriate. The key themes of the discussion from the perspective of participants are summarised below.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Details</th>
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| **Patient and family role in recognising and escalating patient deterioration** | • There should not be any expectation on patients and their families to recognise and escalate deterioration.  
• However, families often play this role naturally and they should be able to raise concerns where they are confident to do so.  
• Having someone to advocate for patients is important.  
• As nurses may be too busy to pick up on deterioration, families can alert staff when they notice changes. |
| **Barriers to patient and family-led escalation** | • While some participants recounted experiences when action was taken after they voiced concerns of deterioration, many stated that patient and family concerns aren’t always taken seriously by health professionals.  
• Patients and families don’t always know what signs to look for and it can be difficult to get nurses’ attention to voice concerns when they do.  
• Patients may not be able to tell when they are deteriorating, especially if they are older or in poor health.  
• Language barriers may make it difficult for some population groups to escalate deterioration.  
• Some groups may be unlikely to escalate deterioration as they don’t want to bother anyone i.e. stoic personalities, men and older generations. Conversely, some people may panic and raise concerns regularly. |
| **Improving staff response to patient and family-led escalation** | • Health professionals should be grateful when family members notice potential deterioration and they should respond to patient and family concerns with empathy.  
• All concerns to be listened to and followed up which will help patients and families to feel comfortable raising further concerns in the future.  
• Health professionals should inform patients and families of any actions they have taken in relation to the concern e.g. if they are activating the MET team.  
• Patients and families should be given an explanation if no action is taken and this should always be provided in layperson’s terms. |
| **Enabling patients and families to** | • Participants described a numbers of ways that patients and families could be encouraged to look out for and escalate deterioration. |
### Escalate Deterioration
- Nurses should inform patients about what vital signs mean when doing observations; however, they noted that people may become obsessed with the signs they are told to look out for.
- Participants recommended determining who the most appropriate people to educate would be and providing them with a fairly specific guide, given that most patients and their families don’t have medical backgrounds.
- Patients and their families could also be provided with general information on deterioration and who might be at risk.
- A traffic light system was suggested as a visual hierarchy for when certain things need to be escalated.
- Patients and families could be told to raise any concerns with the nurse unit manager, who could play an active communication role and act as a liaison between the patients and consultants.
- A telephone number could be provided as a back-up.
- Staff need to endorse patient and family-led escalation as a way of giving them permission to do so. However, it should also be clear that while it could help, escalation is not their responsibility.
- Having a telephone number could be a useful as a backup, and translators should be available for non-English speaking patients and families.
- Staff could also consider asking questions in different and more specific ways to encourage patients and families to raise concerns.

### Barriers to Staff-led Recognition and Escalation of Deterioration
- Detecting deterioration based on vital signs monitoring is compromised when it is not done on a regular basis, i.e. when patients start to improve or overnight.
- Participants also thought that fear of hierarchy may prevent junior staff from raising concerns to more senior staff.
- Participants suggested that poor teamwork and handover may result in failure to recognise and escalate deterioration.

### Improving Staff-led Recognition and Escalation of Deterioration
- Participants believed that increasing staffing levels would assist with reducing workload making monitoring easier.
- Participants suggested that higher-level nurses should be able to place a MET call directly.
- Some participants felt that anyone should be able to escalate deterioration and they should be able to do so without fear of repercussions.
- Participants also thought that the frequency of monitoring practices could be improved.
- They suggested that monitoring should occur on a more regular basis and that this should be standardised, e.g. every 2 hours.
- While they believed the use of electronic monitoring could be increased, they still saw the value in using this in combination with monitoring performed by nursing staff.
- They also proposed that the level of monitoring in the ED should be increased, given that deterioration can occur quickly and patients may not be monitored while they are waiting to be seen.
- Participants suggested that calling criteria should be determined on a patient-by-patient basis (i.e. parameters based on individuals) and that systems should be flexible.
WHAT CAN WE LEARN FROM THE EXPERIENCES OF EXPERTS?

Interviews were conducted with one ward nurse, two researchers, an ICU liaison nurse, an ICU director, an intensive care specialist and a quality and safety coordinator. Key themes are presented below.

FACTORS INFLUENCING THE RECOGNITION OF DETERIORATION

Importance of holistic observations
A focus on vital signs can be detrimental to the recognition of deterioration. Holistic assessments are required to notice subtle, gradual changes in patient condition.

“I think we’ve become very focused on vital signs, and they’re actually not the be all and end all to patient deterioration. A patient can deteriorate and be pre-arrest, and still have normal vital signs”.

Frequency of observations and adequate documentation
The importance of regular vital signs monitoring and complete documentation of vital signs and other observations was highlighted. Nurses may refrain from documenting observations that fall within calling criteria if they think they can provide an intervention to return them to normal levels. Furthermore, observations may not be completed on a regular basis, particularly overnight.

“If you don’t measure and then don’t document, then obviously you can’t actually trigger the escalation”.

Interpretation of patterns
Documentation of observations is not always coupled with interpretation of the data, therefore deterioration may be missed. This could be due to inexperience or failure to consider emerging patterns.

“I think this probably still does happen whereby people are documenting beautifully and yet not interpreting what they’re documenting”.

Teamwork
Effective communication within teams and having multiple people looking out for deterioration assisted in identification.

“We do a lot of team nursing … so often multiple people will be aware that the patient is deteriorating”.

Frequent disruptions
Frequent distractions impact on the ability to recognise and respond to deterioration in a timely manner.

“And then someone might ask you a question or interact with you even when you’re going to the computer to send off the page. So even in that small amount of time, you’re being grabbed here and there to do something else and then that stops the process”.
INTERVENTIONS TO IMPROVE RECOGNITION OF DETERIORATION

Education
The importance of education in improving the recognition of deterioration was emphasised. Staff members would be more likely to recognise deterioration if they understand the importance of identifying deterioration and how various components of deterioration protocols contribute to this.

“The essence of it was that if you’re documenting blood pressure, it would be good if you understood why you were documenting blood pressure”.

Universal observation charts
Participants reported an improvement in recognition of deterioration after the introduction of universal observation charts, providing a colour-coded range for escalation criteria. While staff were aware of the criteria, these charts provided a more visual representation, acting as an additional prompt.

“Just having the markers, the range that tells you that you have to call it”.

Electronic Medical Record (EMR)
Recognition of deterioration was also reported to improve after the introduction of EMR technology at some sites. Participants stated that alerts that patients’ vital signs were in escalation criteria were useful, as were the reminder prompts to follow up on the potential deterioration.

“EMR makes it a lot easier for them to highlight when something needs to be escalated… They’ve got 100 things going on at once and sometimes it’s nice to have that little prompt”.

FACTORS INFLUENCING THE RESPONSE TO DETERIORATION

Availability of staff
Response was often delayed due to difficulty finding the correct staff for clinical review. This often resulted in staff members progressing further in the escalation protocol and activating the MET, despite the fact that the whole team may not have been required.

“The time for doctors to respond, sometimes can be quite a bit longer than we’d hope. And then we often have to escalate further and get onto their bosses if we’re not winning… And they’re usually okay with that”.

One participant also suggested that availability of staff for a MET call can affect the response. The team may already be responding to a call and may have to leave to respond to a patient who could be more or less in need than the current patient.

Culture
Organisational culture surrounding escalation reportedly varied between health services. While some participants reported working within a culture in which risk awareness was not a priority for many staff members, others stated that a patient safety culture enabled people to escalate concerns without receiving criticism. This was reported to have improved over recent years and was thought to be due to the introduction of guidelines and protocols for escalation.

“There’s a guideline that enforces that this should happen so there’s no pressure when the nurses call for help”.

Participants recalled instances in which staff members were told not to escalate deterioration by more senior staff members.
“The consultants come in and say, ‘Everything is fine, don’t call a MET’, and so hierarchy comes into it again… That goes back to ownership of the patient because they feel reluctant to have other teams come and consult on their own patient”.

A number of participants reported that having objective data, i.e. deteriorating vital signs, to provide to senior staff members made it easier to break down barriers and escalate deterioration.

“Having objective data certainly added to the weight of getting doctors there”.

Experience

One participant highlighted that there is a gap between what junior doctors are expected to do and what they’re actually able to do, due to changing roles over the years. Participants reported that while they are often expected to respond to deterioration, they may be inexperienced in the management of deterioration and therefore provide an inadequate response.

“Patients who deteriorated over many, many hours were cared for by junior nurses, who’d reported abnormalities to junior doctors who didn’t really know what to do, so they just kept doing more obs (observations)”.

INTERVENTIONS TO IMPROVE THE RESPONSE TO DETERIORATION

Access to phones

One participant reported that providing staff with portable phones has made it easier for them to escalate deterioration.

“They could escalate things without leaving the bedside which I think would definitely make it a lot easier”.

MET

While participants believed that the MET system generally improved response to deterioration, it was seen as an imperfect system.

Fixed calling criteria

Multiple criticisms were raised about the adequacy of MET calling criteria. As the MET criteria are not modified for different conditions or population groups, participants suggested that patients can be within MET criteria but not necessarily deteriorating, however it is still compulsory to call. While this reduces the likelihood of staff avoiding MET calls, this does result in more calls, and is therefore more resource-intensive, potentially for patients whose condition could be managed on the ward.

“We have a highly sensitive, very poorly specific criteria which we’ve never adjusted… nor have we made it selective. We apply the same criteria to that group of orthopaedic patients who don’t die and who don’t need anything done as we do to stroke patients”.

One participant also noticed that staff may wait until a deteriorating patient meets criteria before escalating, whereas prior to the fixed criteria, the appropriate people would have been alerted earlier.

“We’re seeing patients that finally get into this that have predictably deteriorated over days but because they hadn’t met criteria, they didn’t get the benefit of a clinical two days ago”.

It was suggested that more specific calling criteria could provide more value for patients and ensure appropriate use of staff resources.
“What would be much better is if you had a much more specific tool… therefore if you got called by the MET system you would know that the patient’s already deemed to be deteriorating, not just to have MET criteria… the second part of that is to have calling criteria that are more specific, but also more relevant to the patient”.

Altered criteria

While the calling criteria can be altered based on a person’s normal vital signs i.e. for those with chronic conditions, this is only a short-term fix and needs to be reviewed on a regular basis.

“If we didn’t have altered MET criteria, the numbers (of MET calls) would be double what they are now”.

Furthermore, one participant reported that they often activated the MET when a patient met the fixed criteria, even when the criteria had been modified to reflect their normal vital signs.

“I just escalate anyway and most of the nurses on the ward would too and just say they have got altered review criteria”.

MET composition

One participant stated that while there are times when a team approach is important, generally patients don’t require the entire MET, as this takes a number of people away from their roles for potentially significant periods of time. Instead they suggested that a response could be provided by a single clinician, with the seniority, expertise and authority to determine who should be called. A team approach may still be deemed necessary, or another specialist clinician could be called.

“There are times when the team approach is important, but vastly for the MET patients, my experience has been that you don’t need a whole team of people outside of the ward”.

However, it was also noted that this senior clinician may be sent to review patients who don’t really need them, so a nurse practitioner or liaison could also be considered for the role.

“If you got a senior person, you’d be sending a senior person to see patients who don’t need them most of the time”.

Deskilling of nurses

Participants reported that deterioration can often be managed by nurses on the ward, however the fixed MET calling criteria limit their ability to do so. Participants were concerned that this would reduce their expertise in the management of deterioration.

“Once you start taking away that responsibility, they won’t have the expertise”.

“There are some issues around deterioration that, as a nurse, you can actually sort out. You don’t need to call the MET to deal with it”.

One participant suggested that they may still use their judgement to deal with deterioration, however it is not documented.

“Nurses still use their judgement, they just don’t write any of it down… so there’s this whole invisible set of obs floating around in nurses’ heads. Because they know if they write it on a chart and they don’t call the MET, they’ll get in trouble”.

Structured communication tools
One participant suggested the use of a structured handover communication tool involving four questions to foster thinking about potential deterioration.

“What do you think will happen to this patient on this shift? What else could happen? So what do you expect? What is your Plan B?”

**PATIENT AND FAMILY-LED RECOGNITION AND ESCALATION OF DETERIORATION**

**Patient and family role in recognition and escalation of deterioration**

Appropriate recognition and response to deterioration by staff would negate the need for patients and families to be involved in escalating deterioration; however patients and families could complement the role of staff.

“You could argue if you had a proper escalation process, a proper communication process, we actually wouldn’t need the family”.

Staff should be encouraged to engage with patients and their families and partner with them to gain insight into potential deterioration. However, it was emphasised that responsibility should not be placed on the patient and their families.

“If they pick up something, let us know”.

**Patient and family escalation processes**

While numerous sites had phone numbers, these are not commonly used and most patient and family-led escalation occurs informally i.e. via ward staff.

Appropriateness of patient and family escalation varies. In some cases the escalation is appropriate; in others the escalation process is being used as a complaint service.

**Barriers to patient and family-led escalation**

Patients and their families could be reluctant to escalate deterioration due to fear that they will upset the treating team or get a negative response.

“One of the ongoing concerns is if you raise the concern that you’re not getting the right treatment that the caring team will then take it out on you and you’ll be labelled as a difficult family or a difficult patient”.

Patients and families don’t like to escalate deterioration, but feel compelled due to worry or anger.

“I think by the time a family decides to escalate care, they’ve run out of options”.

**Encouraging patient and family-led escalation**

Patients and their families are educated fairly passively about escalation of deterioration, often via posters and leaflets and sometimes via brief conversations. However, it was suggested that this wasn’t always adequate to raise awareness and ensure inclusivity for all population groups.

“It’s pretty passive. There’s posters and information leaflets. It is pretty passive. And very limited to patients with high levels of health literacy and reasonable levels of English… I think on some wards they brief the patient and family. Now how much of that actually sinks in, I don’t really know”.

BEHAVIOURWORKS AUSTRALIA | HOW CAN WE IMPROVE ESCALATION OF PATIENT DETERIORATION IN THE HOSPITAL SETTING? 18
Response to patient and family-led escalation

Staff believed that they generally responded well to concerns raised by patients and families and emphasised the importance of the need to listen and respond. They felt that any concerns raised by patients and families assisted in the care provided.

“To me, it’s about listening to that concern and making sure that we do something when it’s appropriate”.
QUESTIONS FOR DELIBERATION

1. What are the biggest challenges in escalation of deterioration in the Victorian acute care setting that could be addressed by behaviour change?

2. Is there a specific condition, environment, escalation process or other potential focus for behaviour change?

3. What identified behaviour change interventions are:
   a. Feasible
   b. Testable in the short term i.e. 6 months
   c. Scalable across Victoria
   d. Measureable (i.e. sufficient volume in timeframe for key outcomes)
   e. Sustainable?

4. Which is the highest priority for a pilot study and why?

5. What are appropriate success measures for a pilot study?
REFERENCES

BEHAVIOURWORKS AUSTRALIA | HOW CAN WE IMPROVE ESCALATION OF PATIENT DETERIORATION IN THE HOSPITAL SETTING?  23


APPENDIX 1: PROJECT METHODS

THE FORUM APPROACH

This project is based on the Forum approach, an established method of promoting evidence-informed practice change, which involves four key activities:

1. Defining a major challenge through consultation with key stakeholders to understand the issues and complexities;
2. Gathering from published literature and further consultation the information necessary to properly consider the challenge, and presenting this in a briefing document (i.e. this document);
3. Convening a structured stakeholder dialogue to connect the information from the briefing document with the people representing key stakeholder groups who can make change happen; and
4. Reporting outcomes through a dialogue summary and related academic publications and briefing the organisations and individuals who can affect change about their role in developed strategies.

The Forum approach of evidence review and structured stakeholder dialogue was established by John Lavis in Canada in 2009. Subsequently Dr Peter Bragge and Professor Russell Gruen were funded by the Victoria Transport Accident Commission from 2012 - 2015 to lead the first Australian-based Forum program, which focused on addressing high-priority challenges in brain and spinal cord injury care, research and policy. Outputs of the NTRI Forum program have been published online and in peer-reviewed literature. Satisfaction in the NTRI Forum process was high based up on participant surveys, with a mean score of 6.4 / 7 (where 1 is ‘Failed’ and 7 is ‘Achieved’) for ranking of how well the briefing document achieved its purpose (N =114, response rate 45%) and 6.0 / 7 for the stakeholder dialogue (N=192, RR 76%).

RAPID REVIEW METHODS

Search strategy

A comprehensive search of the following databases was undertaken: PsycINFO via Ovid, Medline via Ovid, Web of Science and Cochrane Library via Wiley. The PsycINFO search strategy is reproduced below:

Table 3. PsycINFO search strategy

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<td>1 (escalat* adj2 care) OR fail* to rescue OR rapid response OR early warning score OR critical care outreach OR call* for help OR (patient adj2 deteriorat*) OR medical emergency team OR fail* to escalate OR request* help OR request* support OR (ask adj2 help) OR condition help OR emergency assistance OR track and trigger OR early warning system* OR early warning signal* OR early warning scoring system* OR (recogni* adj2 respon*) OR clinical deteriorat*</td>
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<td>2 barrier* OR hurdle* OR obstruct* OR cause* OR hinder* OR prevent* OR challenge* OR facilitat* OR promot* OR support* OR encourag* OR incentive* OR contribut* OR enabl* OR factor* OR intervention* OR trial* OR program* OR “quality improvement”</td>
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Screening and selection

Two reviewers screened the citations against the inclusion and exclusion criteria listed in Table 4. Data extracted from the included articles was used to inform a commentary on the barriers and
facilitators to escalation of patient deterioration and interventions to improve escalation in the hospital setting. Data extraction tables are available on request.

Table 4. Inclusion and exclusion criteria

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<td><strong>Study Type</strong></td>
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<td>• Systematic or narrative reviews. Reviews of quantitative or qualitative studies will be included</td>
<td>• All primary study designs</td>
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<td><strong>Population</strong></td>
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<tr>
<td>• Health professionals, patients and families</td>
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<td><strong>Study Design</strong></td>
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<td>• Qualitative, observational or interventional</td>
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<td><strong>Study Setting</strong></td>
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<td><strong>Outcome</strong></td>
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<td>• Escalation of a deteriorating patient</td>
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<td>• English-language</td>
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<td>• Peer-reviewed journal publications or reports</td>
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<td>• Published 2013 - 2018</td>
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CITIZEN PANEL METHODS

Facilitation framework

**Understanding escalation of patient deterioration**

- What perspective do you bring to today? What challenges or other experiences have you encountered with escalation of deterioration in the hospital setting?

- What are your main concerns about escalating patient deterioration in the hospital setting?

**How could we improve escalation of patient deterioration?**

- Based on your experience, what do you think could be done to make it easier to escalate patient deterioration?

- What role should patients and families have in escalating patient deterioration?

- What is the best way to encourage patients and families to escalate deterioration?

- What is the best way for patients and families to escalate deterioration?

- How can we improve how staff respond to patient deterioration?

**What factors make it hard to solve issues with escalation of patient deterioration?**

- What are the main challenges to successful escalation of patient deterioration?
Participants
Socio-demographically diverse Victorian community members were recruited through ACI research services.

Procedure
The citizen panel was convened on the 31st of October 2018 and participants gave informed consent. Citizens were provided with a plain language version of this briefing document. During the deliberation of the problem, citizens were asked to share their perceptions about escalation of patient deterioration in the hospital setting. Citizens were asked to reflect on their own experiences and those of family and friends to consider the underlying challenges and inform the types of interventions which may be appropriate.

CONSULTATION INTERVIEW METHODS

Interview framework
The interviews were semi-structured, allowing the interviewer to explore emerging themes as well as salient issues. The interview framework was as follows:

1. Describe the processes for escalation of care in your health service? Are there any guidelines or protocols that you follow?
2. Can you provide a brief introduction and outline your role in patient deterioration and escalation of care in the hospital context, including how long you have been in this role?
3. From your perspective and experience, what are key issues that need to be addressed to ensure that patients and families can actively communicate with staff and escalate deterioration?
4. What are the key issues that need to be addressed to ensure that staff can escalate deterioration?
5. Can you recall particular instances in which patients/families or health professionals escalated patient deterioration? What facilitated this process?
6. What strategies are you aware of that have been employed in the past to improve escalation of patient deterioration by patients/families or health professionals?
   a. (if answered 5) How successful have these strategies been?
   b. (if answered 5a) What factors do you think have contributed to the success or failure of previous strategies?
7. Do you have any other comments on escalation of patient deterioration by patients/families or between health professionals in the hospital setting?

Participants
Participants were purposively selected based upon their experience and/or expertise in the area of escalation of patient deterioration in the hospital setting.

Procedure
Participants were contacted by BehaviourWorks Australia and invited to take part. Research aims and procedures were outlined in an Explanatory Statement given to all participants prior to the interview. All interviews were conducted via telephone. Interviews lasted between 13 and 66 minutes. Interviews were conducted by AL between September and November 2018. Interviews were digitally audio-recorded, transcribed verbatim, anonymised and stored securely.
Analysis

Interview transcripts were coded and analysed thematically using a computer-assisted qualitative data analysis software program (NVivo 11, QSR International Pty Ltd 2014, Doncaster). Interview transcripts were coded according to emergent themes relevant to the topic. Direct quotations from interview transcripts were used to illustrate key themes. The participant categories (i.e. role and responsibilities) have been de-identified.
## APPENDIX 2: RAPID REVIEW QUALITY APPRAISAL

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