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Better patient safety

Preventing patient harm in emergency and urgent care settings

Australasian College for Emergency Medicine

CENA College of Emergency Nursing Australasia Ltd

SCV Safer Care Victoria

VICTORIA State Government

vmia

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Victorian Managed Insurance Authority (VMIA) acknowledges the Traditional Custodians of the land on which we do business and we pay our respects to Elders past, present and emerging. We acknowledge the important contribution that Aboriginal and Torres Strait I slander peoples make in creating a thriving Victoria.

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Foreword

Patients need to feel safe. They need to know that they are getting the best care. By reducing the risk of harm wherever we can in our emergency departments and urgent care centres, we take crucial steps towards that goal.

This report marks a turning point for VMIA and our partners, and is endorsed by Safer Care Victoria, the Australasian College for Emergency Medicine and the College of Emergency Nursing Australasia.

Together we have accomplished a significant piece of work to identify interventions that will make a real difference to the quality of care and safety of patients in our health system.

We also have a better insight into the risks patients face in emergency and urgent care settings. Unsurprisingly, risk factors are diverse: decision making, the availability of information, and the dynamics of supply and demand, to name a few. They also interact in complex ways and touch every point of the patient's journey.

Our recommended interventions focus on clinical decision making. Doctors, nurses and paramedics make their decisions under pressure and in situations of extreme uncertainty. We can do something to help them manage that uncertainty, and even reduce it.

We're also changing the way we talk about diagnosis in an emergency. By communicating to patients about the realities of the diagnostic process, we can help them to see how they are part of it.

"The provision of quality care is often about resource stewardship and equity – not just for individual patients, but in order to better support all communities.

Emergency medicine is a group effort. Diagnosis, like most elements of medicine, is an evolving and complex process that relies on collaboration, teamwork and shared decision making. This process is shared with other healthcare professionals from across the system and, most importantly, with patients and carers.

Preventing harm is about making good decisions and more rational use of health resources. This sometimes means less medicine – not more.

This project is a vital step that can help support clinicians to deliver high-quality care in the rapidly changing environment of emergency care."

Dr Clare Skinner
ACEM President

This is not just semantics. This is about understanding what it takes to deliver high-quality care and reduce the risk of harm. We have to understand what doctors, nurses, paramedics and other clinicians are doing, and support them.

Patients will understand that this is important.

For VMIA this matters because we help Victorians and health services to recover, as far as that is possible, through our insurance program.

"The approach used in this report to engage both consumers and clinicians in jointly agreeing recommendations is to be greatly commended. Consumers should be partners in the management processes of their health and illness and the research evidence demonstrates the benefits to consumers and the wider health system when adopted. The challenge for the system is to now implement these very insightful improvements to care."

Prof Michael Roberts
CEO, Safer Care Victoria

"As the Victorian Government's insurer and risk adviser, VMIA has a history of collaboration across government and the healthcare sector, supporting research and providing advice on minimising risk. We know from our successful harm prevention programs in maternity services that these interventions improve patient outcomes and reduce claims. By partnering with clients and clinicians to lower risks in emergency settings, we're proud to play a part in improving healthcare outcomes for all Victorians."

Andrew Davies
CEO, VMIA

We know that the interventions that stick are those that are designed and developed with the clinical practitioners who will use them. Our roadmap starts with interventions that will bring obvious benefits and be easy to implement across the sector. We look forward to working with our partners and the wider sector to reduce patient harm in emergency and urgent care settings.

Throughout this document we talk about clinicians and clinical practitioners. Care and diagnosis are team work though, so we want to be clear about who we mean when we use these terms. When we talk about clinical practitioners, we mean the doctors, nurses and paramedics at the point of care in an emergency or urgent care setting. We also mean the allied health professionals who contribute their skill and knowledge at all points of care from the moment the patient comes in the door: these include pharmacists, physiotherapists, occupational therapists and social workers, among others.

The purpose of this document

This document is practical in purpose. It presents our recommendations and gives our reasons for them. It also unpacks how they would be implemented and who would do it.

We wrote it for those who will be directly involved in that work, or who will free those people up or provide resources for it. That's the clinicians, managers, executives and boards of health services, system owners and policy makers.

We believe this is valuable information for consumer groups too, so our report has been written with them in mind while remaining useful to our main audience.

In keeping with our purpose, we've focused on the factors that our data and research show are most significant in preventable patient harm. These relate to clinical decision making and management of the patient. We've also discussed the difficulties clinicians face in making decisions and escalating care in an emergency situation. We've been particularly keen to give a true picture of what doctors, nurses, paramedics and other clinicians are doing in an emergency. We want patients to know that diagnosis is a process, one that we need them to be part of.

In our recommendations we've homed in on specific high-risk presentations and points in the patient's journey. We've looked at the experience of junior staff and also the differences between the emergency department of a large hospital and an urgent care centre in regional Victoria.

Urgent care centres are a key entry point into the Victorian healthcare system for people living in small rural communities. Although they share attributes with emergency departments in cities and larger towns, they do not provide the same level of emergency care and may not be open 24-hours a day. They are typically staffed by nurses and on-call general practitioners to provide care for minor injuries and illness. In an emergency, they can provide initial resuscitation and limited life support to patients in a critical condition, before the patient is transferred to a larger hospital.

We've also focused on where we can get the most benefit from our effort. We've given priority to simplifying processes and making it easier to use these processes at the point of care. You'll also see recommendations designed to share experience in communities of practice, so that, collectively, we can learn and improve.

To succeed we need clinicians to help us design and develop the interventions, so that they work in the real situations where clinicians provide care. This will increase the chances of them being adopted.

As well as that, we need leadership—from clinical leaders and the governing bodies of health services—to set expectations and invest in systems, processes and people to effect long-term change. Policy makers can lead with innovative policy and programs that secure enduring change across the whole health system.

Risk practitioners, quality improvement teams and insurance managers should know about this report, because our recommendations will play a part in minimising their health service's insurable risk.

Above all, consumers need to have a positive experience when they come to an emergency department or urgent care centre. We hope that, by lifting some of the 'cognitive load' that clinicians bear, we can free them up to share decision making with the patients and carers involved.

We want patients to be safe when they come to our hospitals. We want them to get the care they need. The purpose of this document is to contribute to that experience in a material and measurable way.

For those of you who want to know more about why we have recommended these interventions, we have a literature review, *Interventions to improve patient safety in the emergency department*. Our project steering committee has also stated how these recommendations fit into the big picture of improving the quality of care and patient safety in Victorian health services in *Emergency and urgent care: The long-term system opportunities*.
These supporting documents are available at https://www.vmia.vic.gov.au/risk-advisory/harm-prevention/emergency-department/.

Executive summary

Emergency departments and urgent care centres are high-risk settings. Sometimes, despite the best efforts of teams working under pressure in a complex environment, patients experience preventable harm.

To find ways to reduce the risk of harm, VMIA partnered with Safer Care Victoria and the Australasian College for Emergency Medicine. We analysed state-wide data, reviewed evidence-based best practice, and worked closely with clinicians and consumers to understand why adverse patient safety events occur and how we can help improve patient safety.

Our 11 recommended interventions are designed to:

- help clinical practitioners make decisions at the point of care
- give them easier access to information
- mobilise resources available in the wider system for local need
- build and share practitioners' knowledge and skill.

They build on the culture of continuous improvement in our health system and complement the ongoing significant work towards this shared goal. We have given priority to simplifying processes, addressing high-risk presentations, and scaling up current good practice.

We've prepared a 3-year plan to develop and deliver the interventions, starting with clinical bundles of care and escalation criteria. We have strong evidence that these will be effective. They are also comparatively easy to design, develop and adopt.

VMIA, Safer Care Victoria and the Australasian College for Emergency Medicine will continue our partnership to design and develop many of the interventions. The Department of Health will be asked to endorse and, in some cases, fund interventions.

To succeed, these interventions will need visible and vocal support from health service boards and executives. This is an opportunity to adopt definite measures that—on our best available understanding—will improve the quality of care and safety of patients in emergency departments and urgent care centres.

Adopting the interventions will make a tangible difference to a health service's risk profile and demonstrates taking steps to control insurable risk. It will also contribute towards achieving National Safety and Quality Health Service Standards including:

- the comprehensive care standard
- specific standards, such as those to do with communication, partnering with consumers, and recognising and responding to acute deterioration
- clinical governance standards, which include a responsibility to continuously improve safety and quality.

Clinician and consumer involvement will be critical at all stages of development and delivery.

Healthcare leaders and managers may need to give clinicians time so they can contribute to the design and development of interventions. When it is time to adopt changes into business as usual, their leadership will be instrumental in driving and sustaining this change.

Quality managers, risk practitioners and insurance specialists also need to know about these efforts to reduce the risk of harm so they are recognised in the organisation's risk and quality management.

Adopting the interventions demonstrates your efforts to improve care. Patients, communities and stakeholders will want to know about that. We encourage you to take the opportunity to communicate with patients about new measures where that's appropriate and build awareness in your communities about how these will benefit them. This is an opportunity to show your stakeholders how you are improving quality and safety in your health service.

Why we did this work

In 2020, more than 1.6 million people presented to one of the emergency departments in Victoria's public health system. Clinicians treated 1,568,109 of them, providing outstanding care and a positive outcome for the patient. However, occasionally the outcomes are poor. In some cases, the consequences are severe, causing pain and suffering and also loss of independence for patients and the people caring for them.

As well as harming the patient, adverse events can damage the confidence of people coming to the hospital and the communities they are part of. The reasons why these events happen are complex. In an emergency, clinicians are making decisions in situations of sometimes extreme uncertainty. But we know that much of that harm can be prevented. The purpose of this project was to find out how, so patients who come into our hospitals are safer.

Our ambitions for this project are very much in accord with the vision spelled out in *Targeting zero: Better, safer care: delivering a world-leading healthcare system*, a review of hospital safety and quality assurance, which was published in October 2016.

The first point in that vision stands out for our project steering committee:

The world-class care patients receive is supported by a world-class system of quality and safety assurance.

Our program of research and consultation provides good evidence for interventions that will make a material difference to the safety of patients and the quality of care they receive. This is our most significant contribution to the vision of 'targeting zero' avoidable harm.

Anyone assessing a hospital's quality improvement measures and risk controls will be able to check this baseline of evidence and our assessment of the options. They will see that these interventions have been chosen based on the best available evidence and why we believe they will work.

These interventions cannot be the end of the story though. Many of our recommendations are about making sure that when anyone, in any health service, in any part of the system, learns something then that knowledge will be shared. Using this knowledge, quality and safety measures can be scaled up across the whole system.

In this, we fully back this aspect of the vision expressed in *Targeting zero*:

Individual safety and quality success are shared and built into our state-wide system.

We know that our doctors, nurses, paramedics and allied health professionals have vast experience and skill and a genuine desire to improve care. Our strategy for designing, developing and adopting solutions in health services also makes sure that:

Frontline healthcare workers have a real say on how to make the system safer and lead the way on improvement and best practice.

Finally, all our interventions are about freeing up clinicians' time, attention and energy to make sure that:

Patient views and experiences are heard and shared at every point of our health system to drive continuous improvement.

The experience of the patient is our criterion of success. As we said in the foreword, they need to feel safe in our emergency departments and urgent care centres. They need to know that they are getting the best care. By reducing the risk of harm wherever we can, we take crucial steps towards that goal.

Our recommendations

What we want to do	How we recommend that we do it
Give clinical practitioners support at the live, critical point when they are deciding the best course of action in a situation of limited information	1. Design and adopt new bundles of care for high-risk presentations to help practitioners rapidly assess a patient, choose the appropriate clinical pathway, and provide follow up care after discharge. Where feasible, upgrade hospital electronic health record systems so that bundles of care are integrated into the data entry workflows. 2. Simplify and standardise clinical guidance material, such as guidelines, checklists, flowcharts, so that they are easy for practitioners to use, and improve access at the point of care. 3. Agree and adopt criteria to escalate patients who make an unplanned return to the emergency department or urgent care centre to the attention of a senior practitioner to support decision making. 4. Expand telehealth so that it includes decision support from senior and specialist practitioners for patients who need non-critical care.
Make whatever information we do have about a patient available to clinical practitioners and support staff at key points along the patient's journey	5. Implement encrypted closed-loop messaging services for communication between staff within a health service, ensuring that it meets privacy and security standards, links to the electronic medical record, and has robust governance. 6. Trial expanded digital notification systems to capture and follow up abnormal laboratory test and radiology results, in addition to direct phone call for urgent results.
Use central knowledge of the whole state-wide system better to mobilise resources and provide the care that the clinical practitioner has decided is needed	7. Expand the current services that coordinate critical patient transport to include specific non-critical patients so that practitioners can make one call to escalate for further care, identify which health service in the state has the capacity to give that care, and coordinate their transport.
Build the knowledge of practitioners so that they are better prepared for the types of events that are likely to occur	8. Publish and share lessons learnt from adverse patient safety events in a variety of formats to communicate patient stories, case studies, best practice and other insights. 9. Establish a forum for discussion and sharing of current issues, emerging trends, examples of best practice and learning from adverse events. 10. Establish an online library of resources to improve assessment and management of high-risk presentations, including case studies and evidence-based recommendations for ongoing training and education. 11. Improve how data about adverse patient safety events are presented to clinicians and managers so they can better identify opportunities to reduce risk and improve quality of care.


On waking the next morning Cody became very unwell and was rushed back to the hospital but could not be revived. He died of septicaemia.

Patient story

Cody Hooper*

Cody Hooper was a healthy toddler, 18 months old. After a night of fever with vomiting, his mum took him to the local emergency department. Nurses noted he was pale and had a high temperature and rapid heart rate. He was given paracetamol but vomited it up. The emergency specialist doctor prescribed smaller doses of paracetamol and ibuprofen for fever. After two hours his heart rate had improved slightly, but he still had a fever. The doctor decided against his initial plan to perform blood tests when Cody appeared to be a bit more interactive. He was diagnosed with a viral infection. The rash that developed just before he was discharged was thought to be consistent with this.*

On waking the next morning Cody became very unwell and was rushed back to the hospital but could not be revived. He died of septicaemia.

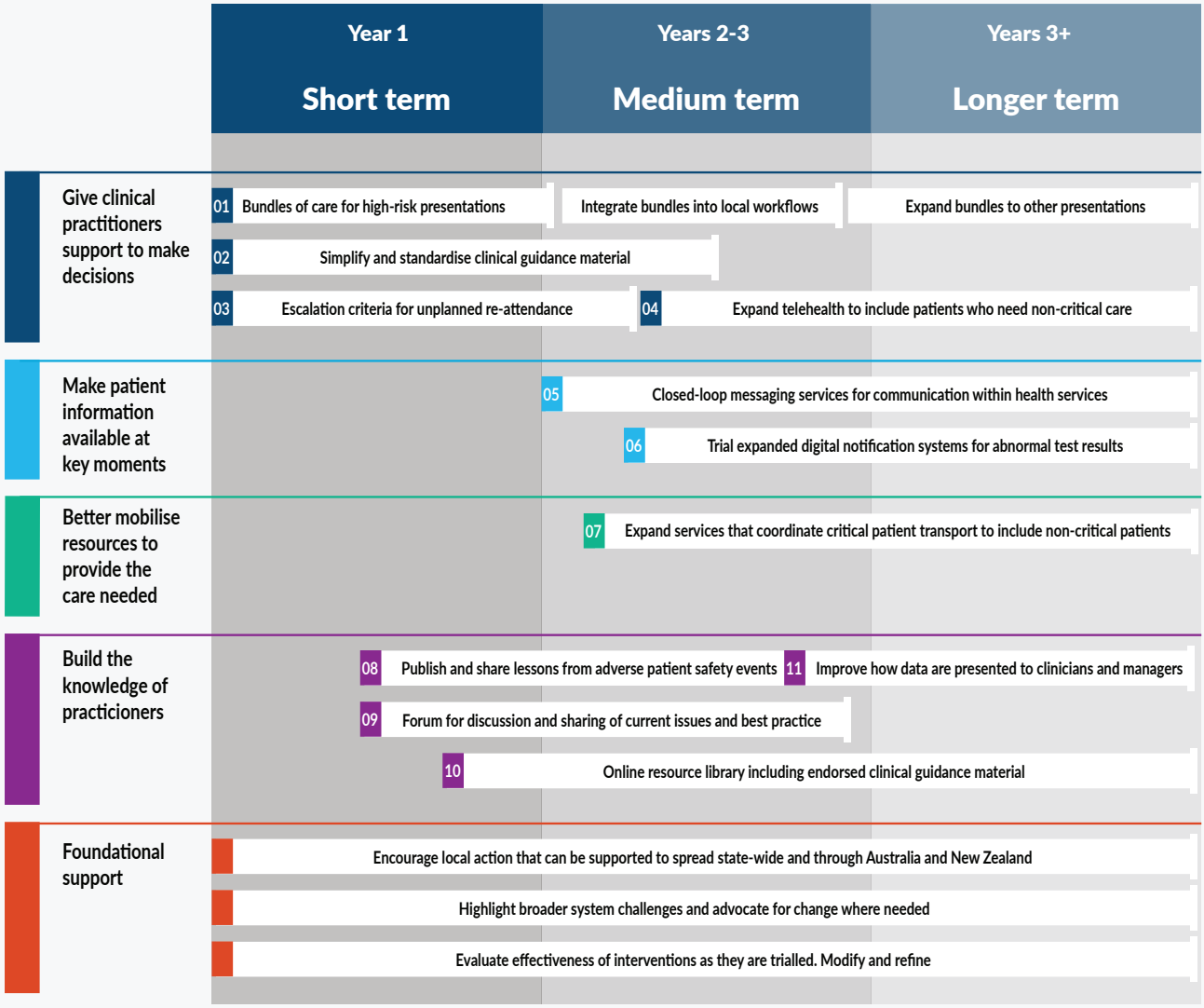
The review of his initial presentation to the emergency department noted that his vital signs had been abnormal for the length of his stay. He had ongoing fever, and despite brief improvement, he was lethargic when discharged. His vital signs were not recorded on discharge. They had also never been charted according to the recommended practice of a colour-coded format in the electronic record. This format makes it easier to identify abnormality, track it and raise concerns.

The coroner, based on expert advice, concluded that although viral infections are a common cause of fever, Cody had features that should have raised concerns for bacterial infection. They also concluded that the treating specialist had failed to recognise signs of possible sepsis, to investigate this possibility of sepsis, and to administer antibiotics.

The coroner recommended that all staff new to the emergency department complete an orientation program on using the sepsis guidelines to monitor and report a patient's condition.

* *We have protected the family's privacy by not using their child's name. For this patient story, we have relied on coroner's reports in the public domain with light editing for clarity.*

Our roadmap for delivery



Who we are

Our project is a partnership between VMIA, Safer Care Victoria (SCV) and its Emergency Care Clinical Network, and the Australasian College for Emergency Medicine (ACEM).

VMIA is the Victorian Government's insurer and risk adviser. We support Victoria's public health services, including all public emergency departments and urgent care centres, as well as Ambulance Victoria, SCV and the Department of Health.

SCV is Victoria's healthcare quality and safety specialist. The Emergency Care Clinical Network works with clinicians for improvement in emergency care settings including ambulance, emergency departments and urgent care centres.

ACEM is the organisation responsible for training emergency physicians and the advancement of professional standards in emergency medicine in Australia and New Zealand.

Our project team included a Fellow of ACEM to provide clinical insight, and was guided by the project steering committee. The committee included expert medical and nursing clinical representatives from metropolitan and regional health services, as well as non-clinical committee members with consumer backgrounds, legal, project management and medical indemnity claims expertise.

Our project steering committee:

Ursula Harrisson (Chair)

Manager, Harm Prevention Programs, VMIA.

Assoc Prof Tim Baker

Director, Centre for Rural Emergency Medicine, Deakin University.
Emergency Physician, South West Healthcare.

Karen Van Schajik

Claims Specialist, VMIA.

Elizabeth Flemming-Judge

Consumer representative.

Prof Peter Cameron

Clinical Lead, Emergency Care Clinical Network, SCV.
Academic Director, The Alfred Emergency and Trauma Centre.

Prof Anne-Maree Kelly

Adjunct Professor, Australian Centre for Health Law Research, Faculty of Law, Queensland University of Technology.
Emergency Physician, Director, Joseph Epstein Centre for Emergency Medicine Research, Western Health.

Emma Rowbottom

Acute Quality Coordinator, South West Healthcare.
Associate Nurse Unit Manager (ED), Warrnambool Base Hospital, South West Healthcare.

Assoc Prof Carmel Crock

Chair, Quality & Patient Safety Committee, ACEM.
Director, Emergency Department, Royal Victorian Eye and Ear Hospital.

Vanessa Gorman

Chair, International Advisory Council, Emergency Nursing Association.
Senior Operations Manager, Outbreaks, COVID-19 Public Health Division, Department of Health.
Former Emergency Services Nurse Unit Manager, The Royal Women's Hospital.

Assoc Prof Julia Morphet

President, College of Emergency Nursing Australasia.
Deputy Head of School, Nursing & Midwifery, Monash University.

The methodology we used to come up with these recommendations

Our approach

Our data and analysis

We analysed 10 years of medical indemnity claims from health services across the state, using the London Protocol[1], a process for investigating and analysing clinical incidents.

Following the protocol, we analysed claims according to the following factors:

- patient
- task and technology
- individual (staff)
- team
- work environmental
- organisational and management
- institutional context.

To make sure we had identified genuine factors in patient harm, and also accurately reflected the current state of the Victorian health sector, we validated our analysis against:

- the professional experience and expert opinion of clinicians
- VMIA's current open emergency medical indemnity claims (2018-2020)
- sentinel event data from SCV
- themes from ACEM's Emergency Medicine Events Register
- analysis by the Rural Urgent Care Nursing Program of coronial inquests into deaths in emergency departments and urgent care centres.

Root cause analysis of the sentinel events data improved our understanding of contributory factors and system issues. It also gave us a richer clinical picture of the types of events uncovered in the claims data.

Our data

VMIA - closed medical indemnity claims data with date of loss 2007-2017, classified within emergency medicine (including both emergency and urgent care) and coded to VMIA's medical indemnity classification system, excluding claims involving the project Fellow's health service.
184 claims.

SCV - sentinel events reported to SCV, linked to emergency or urgent care settings, from November 2017 - October 2020. 76 events.

ACEM - summary themes drawn from 469 incident reports between December 2012 - November 2020 in the adverse event and near miss online reporting system, the Emergency Medicine Events Register.

1 https://www.imperial.ac.uk/patient-safety-translational-research-centre/education/training-materials-for-use-in-research-and-clinical-practice/the-london-protocol/

The review of the literature

To understand what the international research was telling us about risk factors and effective interventions, we reviewed the current literature on patient harm and medico-legal claims in the emergency and urgent care settings.

Medline and CINAHL databases were searched using different combinations of terms such as "adverse events", "Emergency Department", "malpractice", "patient safety", "diagnostic error".

Relevant patient safety websites were also referred to, including those belonging to the:

- Agency for Healthcare Research and Quality (AHRQ)
- World Health Organisation (WHO)
- Australian Commission on Safety and Quality in Health Care (ACSQHC)
- Australasian College for Emergency Medicine (ACEM)
- Institute for Healthcare Improvement (IHI)
- Society to Improve Diagnosis in Medicine (SIDM).

Medline and CINAHL databases were searched using different combinations of terms such as:

- adverse events
- Emergency Department
- malpractice
- patient safety
- diagnostic error

The research cited in the *Making Healthcare Safer* reports from AHRQ were an especially valuable source of evidence for our discussion of interventions aimed at improving diagnosis.

Focus groups with clinical practitioners and health system experts

With international research giving us context, we then turned to focus groups with practitioners who work in the Victorian health system.

We used surveys, rating tools such as Mentimeter, and rich discussion to:

1. identify the top risk factors as they see them
2. rank them according to how they contribute to adverse events and also our ability to control them
3. examine their root causes
4. brainstorm potential interventions
5. identify the interventions that would bring the most benefit for their cost of implementation.

To focus discussion of the interventions, we asked clinicians to examine a set of frequently occurring conditions and presentations. We also asked them to look at events that were preventable or could produce severe consequences for patients.

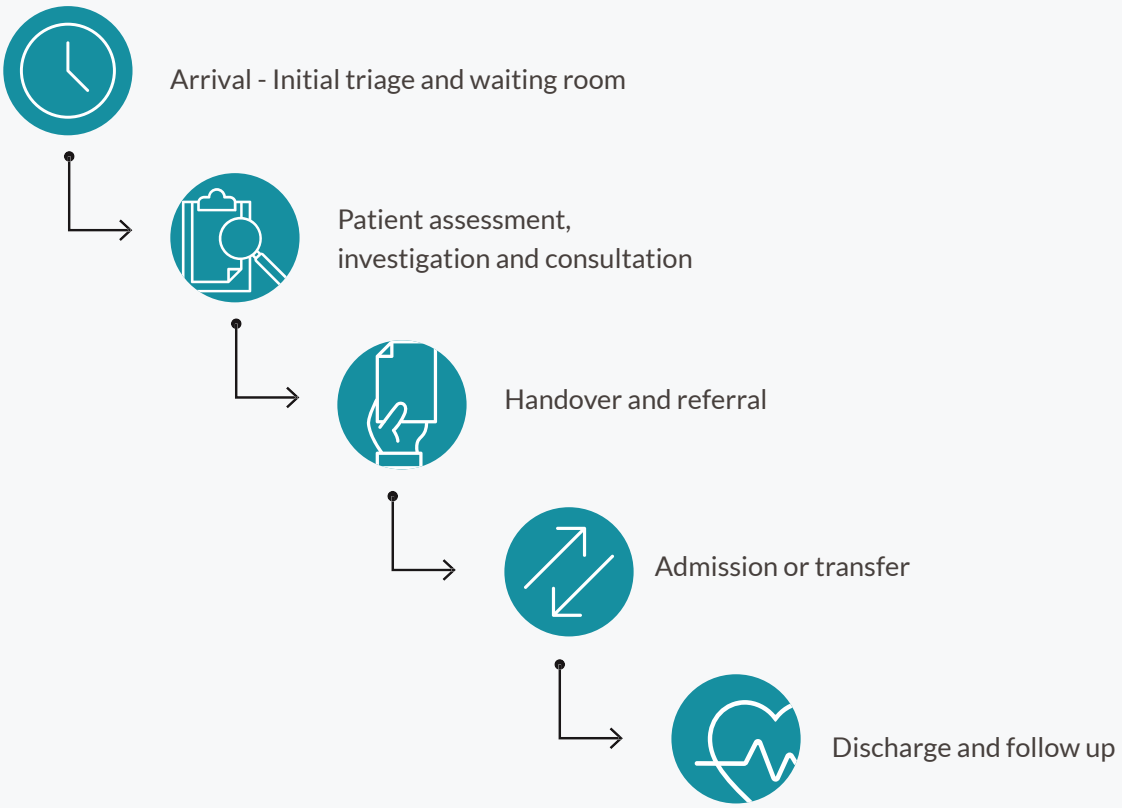
These were:

- neurological type presentations
- back pain, including patients with red flags
- abdominal pain
- minor trauma such as fractures and wounds.

We selected this subset of presentations based on our analysis of VMIA's claims data, ACEM's Emergency Medicine Events Register data, sentinel event data from SCV, and expert opinion from our steering committee's clinical representatives.

We also asked our focus group to examine the patient's journey through the emergency department or urgent care centre to see what was going on at potentially high-risk moments.

The patient journey we explored



Limitations of the research

Our data sets were closed medical indemnity claims and sentinel events notified to SCV. This means that we have analysed what was reported and available to review, rather than all adverse patient safety events in the Victorian health system over the period.

For some of the claims, data was missing and in some cases there was significant disagreement between the expert witnesses about whether harm could have been prevented.

The analysis of closed claims was performed by a single reviewer.

We acknowledge that this type of analysis is prone to biases and could miss factors that weren't reported or highlighted. However, the analysis is consistent with other studies from larger databases internationally and also with the concerns raised by patient safety organisations around the world.

Privacy, confidentiality and legal professional privilege limited what data could be shared with the focus groups. We were able to communicate a clear picture of the risk factors, though, so they could respond with their individual and collective experiences.

Finally, the review of the international literature revealed this as an area of research that is still in its early stages, with difficulties in replication, few randomised controlled trials, and many recommendations still untested.

"… despite limitations in current research, the scale and harm of diagnostic error obliges clinicians to consider adopting preventive strategies that have reasonable face validity, are easily implementable in workplaces, and target individual decision making.[1]"

1 Scott, I. A., & Crock, C. (2020). Diagnostic error: incidence, impacts, causes and preventive strategies. Medical Journal of Australia, 213(7), 302-305.

What does the international literature say about risk factors and interventions?

Risk factors

The age of the patient, in combination with the health care setting and length of stay, is one risk factor—we see both older patients and the very young at a higher risk of harm. The number of elderly patients with underlying chronic conditions has also been increasing, as has the number of people with poor mental health or a history of substance abuse.

Many researchers found a direct link between overcrowding and failure in patient assessment and follow-up care plan, delayed treatment, and an increased risk of preventable medical errors, including errors with medication.

Communication failures were found to be common. For example, failing to communicate changes in vital signs to the attending physician, problems with the transfer of medical information and orders, delayed treatment of patients, and poor communication during handoff.

Patient surveys show that at least one person in three has first-hand experience with a diagnostic error. For patients misdiagnosed in emergency departments there is often a higher rate of serious harm, mortality and length of hospital stay. In Australia, an estimated 140,000 cases of diagnostic error occur each year, with 21,000 cases of serious harm and 2000–4000 deaths.

Errors of diagnosis usually involve many factors, often human and system related, such as cognitive load, authority gradients, poor teamwork and the quality of the work environment. A large majority—up to 80 per cent—are considered preventable.

In addition to physical harm to patients, diagnostic errors also have a significant impact on health care spending and the economy. Researchers have found that diagnostic errors—not surgical mistakes or medication overdoses—account for the largest fraction of malpractice claims, the most severe patient harm, and the highest total of penalty payouts.


The print-out with abnormal test results was misplaced and because of further miscommunication, Katie wasn't notified the next day either.

Patient story

Katie Chan, 22*

22-year-old Katie Chan presented late in the evening to a busy emergency department after twisting her ankle when she jumped from a two-metre-high wall. Her left ankle was swollen and painful and Katie couldn't walk on it.*

The junior doctor examined her a few hours later and ordered X-rays and prescribed pain medication. The night duty doctors were asked to follow up her X-rays and discharge her if there were no fractures.

Due to the large number of critically unwell patients in the department that night, Katie didn't get a medical review. Her nurse notified the night doctor when the X-ray was complete. The night doctor—assessing another patient at the time—quickly reviewed Katie's X-rays, read them as normal, and advised the nurse to let Katie go home with crutches and to see her GP or a physiotherapist for follow up care.

Katie still had pain, especially when she put weight on her left foot. She continued to follow the advice for a sprained ankle, which she'd been given when she was discharged.

The day after her visit to the emergency department, the radiology specialist reviewed her X-ray and reported a fracture of the talus, a bone in foot.

The day consultant in the emergency department—who was also responsible for managing the department—tried calling Katie but couldn't get through. The print-out with abnormal test results was misplaced and because of further miscommunication, Katie wasn't notified the next day either.

Seven days later she saw her GP with ongoing pain and swelling to her ankle. The GP called the hospital for her X-ray but eventually sent her for more X-rays. Ten days after her initial presentation to the emergency department she was told she had a significant ankle injury and would require surgery.

After her surgery, Katie continues to have ankle pain and stiffness and is not yet able to return to her usual active life.

* *This patient story shows a type of patient presentation and circumstances that could occur. It is not based on actual events.*

Interventions

Though the quality of literature is limited—especially for diagnosis-related safety—we found support for a range of interventions to improve patient safety in emergency departments. Some of these interventions target practitioners and patients, while others are aimed at systems and processes.

Practitioners

These intervene in human factors such as cognitive overload, the effects of stress, fatigue, distractions and interruptions, poor interpersonal communication, imperfect information processing, and flawed decision making.

The literature review indicates that interventions targeting teamwork, communication, clinical and diagnostic decision making are considered best practice.

Patients

A large proportion of adverse events have been attributed to failures in communication with patients. The literature indicates that shared decision making is crucial when a clinician faces diagnostic uncertainty.

Patient-directed interventions aim to involve patients in decision making, with better communication and collaboration at the point of care. Patients should also be involved in defining what is considered 'effective'.

Systems and processes

Some of the risk factors in patient harm are overcrowding, lack of resources or clinical support, workload, unreliable referral pathways or follow up of abnormal results.

The literature indicates that interventions aimed at processes or the whole system are more likely to improve care and diagnosis. They are also more likely to become part of ongoing practice than those with a narrow focus or which target individual practitioners.

While the quality of literature in this field is limited, the best available evidence supports:

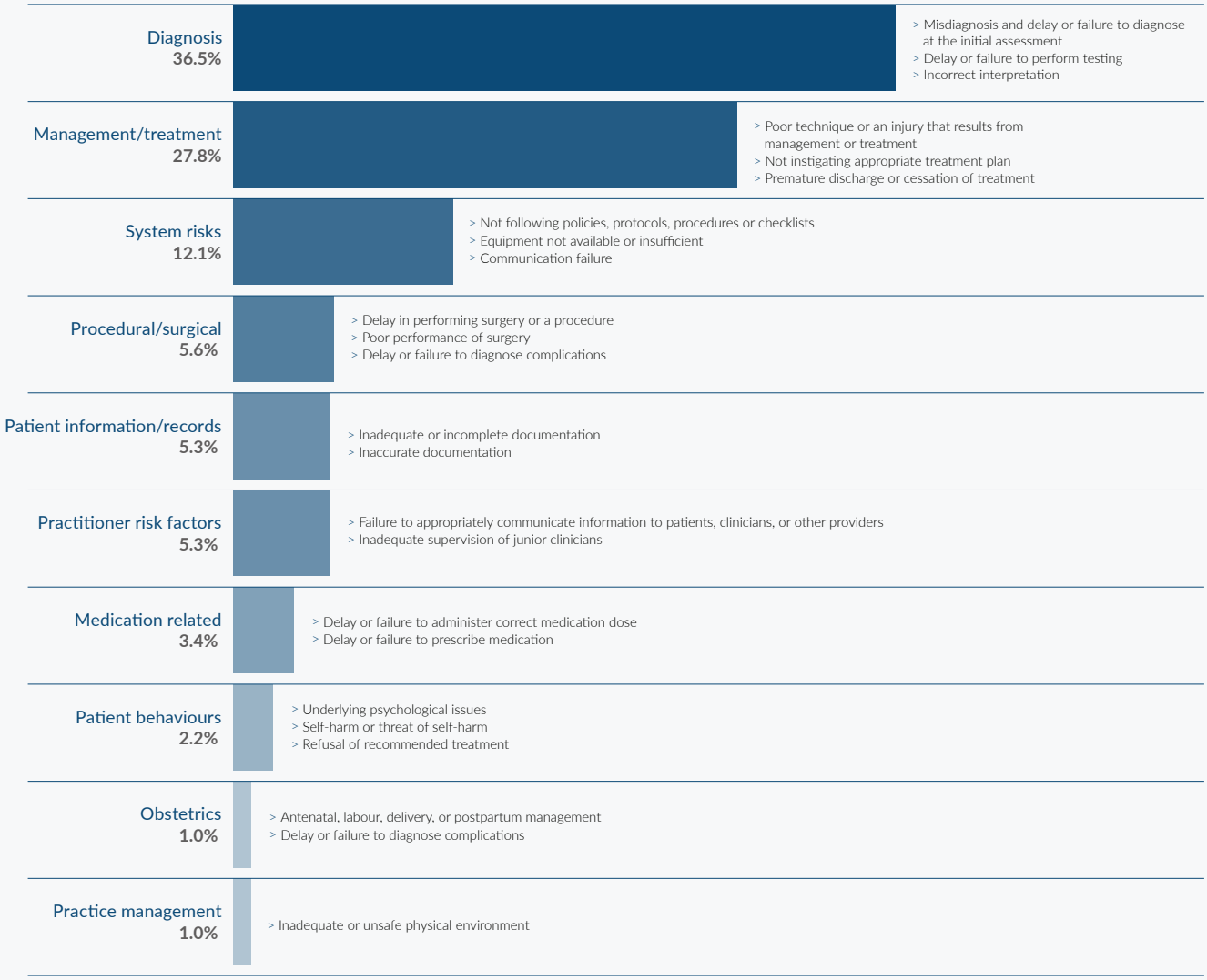
- Multiple interventions which are aligned and aimed at different stages of the patient journey or decision-making process, and which target staff learning, audit and other quality and risk management measures.
- Interventions that are tailored to a specific healthcare setting.
- A whole-of-system approach. Isolated interventions may be effective in the short term but are unlikely to be sustained once initial momentum wears off.
- Fostering a culture of safety, shared learning, communication and empathy.
- Interventions that work at all levels from the individual to the team, organisation and system.

You can view our literature review, *Interventions to improve patient safety in the emergency department*, https://www.vmia.vic.gov.au/risk-advisory/harm-prevention/emergency-department

What we know about the risk factors

Our quantitative analysis of VMIA's closed claims and sentinel event data from SCV showed us that the majority of adverse events involved misdiagnosis, failing to or delaying diagnosis, or a failure to respond to a deteriorating patient (management and treatment). Other adverse events involve risk factors relating to prescribing and administering medication, and not following a clinical procedure correctly.

Contributing risk factors to emergency and urgent care closed claims (from VMIA's medical indemnity classification system)



When we looked at the claims...

Two thirds of VMIA's medical indemnity claims in our data snapshot were by people who presented to an emergency department or urgent care centre with abdominal pain, neurological complaints, non-traumatic musculoskeletal or back pain, and minor injuries.

The largest subset of claims were made by patients who presented with minor trauma such as sporting injuries, falls from low levels, low-speed impacts, and lacerations. In this subset, the most common cause for the claim was an alleged failure to diagnose or treat properly.

Looking at the most severe harms—major permanent injury, catastrophic harm and death—we see that these patients were diagnosed with severe sepsis and infections, cardiac and vascular events, strokes and intracranial injuries, and spinal pathologies.

When we looked at the sentinel events...

There were 452 sentinel events notified to SCV between November 2017 and October 2020. Of these, 76 related to emergency and urgent care settings and were included in our analysis.

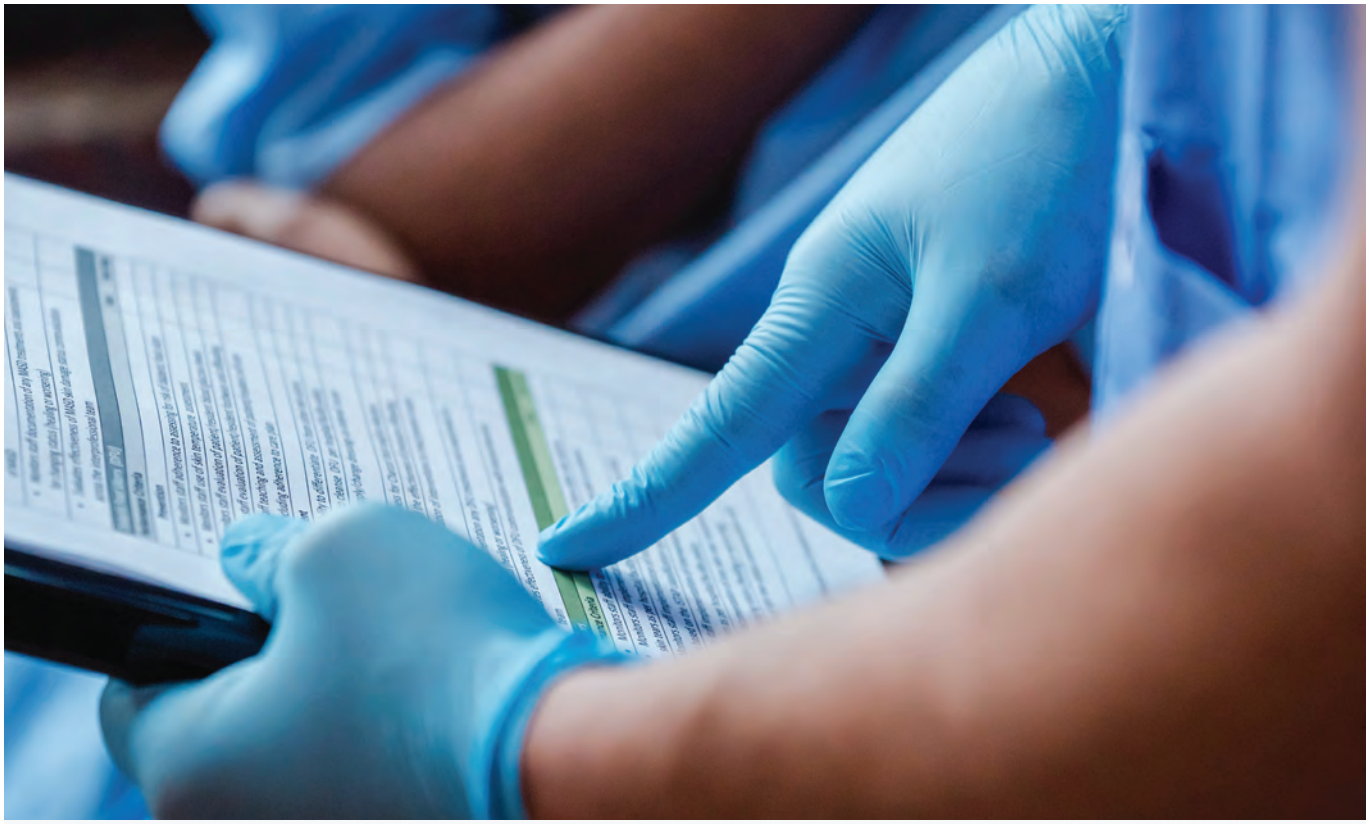
In our data set a majority of patients—60 per cent—presented with one of the following 5 complaints: neurological complaints, abdominal or chest pain, shortness of breath, or falls in older people.

In addition to the diagnoses we observed in the claims data, in the sentinel event data we found a considerable number of events involving self-harm and also intracranial and cervical spine injuries in elderly people.

A significant number involved people who suffered poor mental health.

Sentinel events are, broadly defined, wholly preventable adverse patient safety events that result in serious harm or death to individuals. All health services are required to report adverse patient safety events in accordance with the Australian national sentinel event list.

In addition to the 10 national sentinel event categories, Victorian health services must report on category 11, "All other adverse patient safety events resulting in serious harm or death".



What do we mean by diagnosis?

Sometimes it's possible to identify the causes of someone's illness quickly. The symptoms may be clear. Tests may leave no doubt. A doctor is able to diagnose. That's not always possible though, especially in an emergency.

In an emergency, diagnosis remains a goal, but doctors, nurses and paramedics are also focused on controlling symptoms. They're assessing and managing risks. They're also evaluating whether equipment and other resources are available, tracking down a senior doctor or other expertise, or finding beds in their own hospital or another health service. They also need to consider other patients whose conditions may, or may not, be more critical.

We need to place diagnosis within that broader decision making context. We also need to understand that diagnosis is a process as well as a goal. It's a process that involves questioning, examining, testing, referral and consultation. Teams of skilled practitioners are interpreting information from many sources, making decisions and communicating with each other. Doctors, supported by those teams, are integrating all that into a working diagnosis.

That working diagnosis is still part of that process. It may change in light of new information. This is complex decision making in situations of great uncertainty. On top of that, we know that clinicians are often time-poor, cognitively overloaded, and subject to the same cognitive and social biases that limit most of us in situations far less pressured.

The process of coming to a diagnosis sits right at the heart of that.

Our research shows that a significant proportion of adverse events emerge from the difficulties that clinicians face when they're making decisions. We've recommended interventions that will make it easier for teams to work through a diagnostic process. Others address wider pressures on their decision making at the point of care. We've also looked at how we can build knowledge and share learning, so that knowledge increases and is evenly spread so that everyone benefits, whether they're in a metropolitan hospital or a rural health service.

We found reasons enough for our recommendations in the realities of clinical decision making. There is one other big reason: we need to tell a truer story about diagnosis, and clinical decision making more broadly.

Why? Because it's only by clearly and confidently telling this story to patients that they can join us as an active participant in the process of their own diagnosis and care.

Contributing factors: what are the themes?

A cognitive bias makes us more likely to reason in certain ways. For example, when we see or hear something new, we tend to think that it confirms something we already believe, rather than refutes it. That's a confirmation bias, and it's one of many biases that exist.

Often, we aren't aware that we are reasoning according to one of those biases. They tend to be seen as errors, but they can also be understood as ways of reasoning that work most of the time. The issue is that we don't recognise when we need to over-ride it and make a conscious effort to reason in a way that is more useful in the context we're working in.

Qualitative analysis of both VMIA's claims and sentinel event data from SCV allowed us to identify contributing factors. ACEM's emergency event data gave us further insight. We grouped the factors into themes.

Breakdowns in communication occur during handovers of care between emergency department staff, and between emergency department staff and inpatient units. We also found instances of poor communication with the patient, their caregiver and their doctor. Documents from ambulance services or between the patient's doctor and the hospital were often missing and misplaced.

We saw evidence that cognitive bias was preventing clinicians from reconsidering their diagnosis or properly assessing atypical features.

Failures of teamwork and leadership from senior clinicians led to inadequate or inappropriate responses to an unwell or deteriorating patient.

As well as factors relating to culture and individual decision making, we found systemic issues to do with staffing and workforce that meant that clinicians with the right skills and experience were simply not available at the point of care. This was especially the case in urgent care centres and rural health services.

Clinical workload was also a common systemic factor with surges in demand for a limited supply of clinical attention putting pressure on clinicians to make decisions too quickly.

Unreliable and unsafe processes led to poor management of waiting rooms, unsafe discharge and failure to follow up abnormal results.

We also saw that unclear organisational policies and clinical standards had been a factor in many adverse events, for example, in the coordination of patient transfer.

Some themes appeared at all stages of a patient's journey

Documentation	• Incomplete or missing documents • Differential diagnosis or decision making considerations not documented • No evidence of consent • Inadequate patient instructions or discharge summary • Inadequate or missing pre-hospital or GP documents
Communication	• Ignoring a patient's complaints or cognitive bias impacting how a patient's reported symptoms are interpreted • Not getting a complete history from patients • Conflicting communications • Not using interpreters • Failing to communicate diagnostic uncertainty • Poor communication between providers • Not following up about abnormal results
Experience of clinical staff	• Lack of experience in diagnostic and other complex decision making • Confidence in assessment and escalation • Lack of supervision or leadership • Inadequate experience of staff for complex decisions • Lack of procedural skills • Lack of knowledge of the interactions between medicines and their adverse effects
Leadership	• Senior staff not available • Input not adequate • Failing to supervise junior staff or review clinical decisions • Failing to accept responsibility to manage high-risk presentations or unwell patients
Escalation	• Failure to escalate a clinical concern • Failing to recognise a clinical concern or a patient's deterioration and respond appropriately • Inappropriate response from senior clinician • Waiting on reports or results too long before escalating
Atypical presentation & unplanned return	• Clinical inexperience and lack of awareness • Diagnostic momentum leading to inadequate review • Cognitive bias preventing clinicians from reconsidering diagnosis or properly assessing atypical features • Missing red flags
Situation	• Access to expertise and resources in metropolitan, regional, rural emergency departments and urgent care centre


Advice to get an MRI before transfer, together with delays in confirming a hospital bed, made it difficult to transfer him to a hospital with a neurosurgery service

Patient story

Prakash Babu*

Prakash Babu, 45 years old, attended the emergency department complaining of severe back pain. After waiting several hours, he was assessed and diagnosed with a lower back strain, which the doctor felt might have occurred when he was lifting equipment at work. He was prescribed anti-inflammatory medication, opioids and diazepam and discharged.*

Two days later he couldn't get out of bed and was taken by ambulance to another emergency department. He told the nurse he could not walk because of the pain and asked for more pain killers.

It was noted he had presented there a year ago with back pain and had been prescribed opioid medication. Prakash's lumbar spine X-ray was normal, and he was kept in short stay for physiotherapy review in the morning. His complaints of not being able to pass urine later that night weren't escalated.

The next morning Prakash was incontinent of urine and had decreased sensation and power in his legs, raising concern about an injury to his spinal nerves. Documentation of his neurological examination at the time of his first assessment was inadequate, so it was unclear when the damage might have occurred.

Advice to get an MRI before transfer, together with delays in confirming a hospital bed, made it difficult to transfer him to a hospital with a neurosurgery service. Prakash had back surgery the next evening and is wheelchair bound now.

* *This patient story shows a type of patient presentation and circumstances that could occur. It is not based on actual events.*

Other themes emerged at particular points in the patient's journey

Patient journey through emergency department/urgent care centre

Arrival — Initial triage and waiting room

- Prolonged waiting times with **no review** and patients leaving without medical review.
- **Lack of appropriate safety protocols and resources** at key times.
- **Failure to escalate or communicate** concerns to senior practitioners.
- Assessments of risk and symptoms that put patients in the **wrong triage category**, increase their waiting time and influence diagnostic decision making.

Patient assessment, investigation and consultation

- The availability and reliability of **tests**, ignoring abnormal results, ignoring clinical condition in favour of normal test results, failing to follow up abnormal test results and other incidental findings after discharge.
- **Incomplete, cursory and inaccurate assessment** including missing red flags, ignoring and missing history and findings from examinations by other practitioners, ignoring the patient's concern.
- **Junior medical officers** relying on established pathways for common conditions and ignoring symptoms that don't fit diagnosis, not presenting issues fully when seeking advice from senior clinicians, cognitive biases, premature closing of the decision-making process, lack of knowledge about conditions and findings, not giving appropriate weight to the findings of other clinicians in developing a plan, failing to rethink assessment or diagnosis when a patient presents more than once.

Handover and referral

- Incomplete **handover** to other shifts, wards and clinical specialties, not communicating uncertainty about the plan or the patient's condition, 'diagnostic momentum' leading to incomplete review.

Admission or transfer

- At-risk patients arriving at hospitals with limited resources and needing to be transferred out, delays in **inter-hospital patient transfer** because transport and beds aren't available, issues with decisions about type and urgency of transfer, ad-hoc referral pathways.
- Unclear who is responsible for a patient in the ED waiting for **intra-hospital transfer**, delays in getting to the theatre, reluctance to accept an inpatient when diagnosis is unclear, difficulty in getting specialist advice from other hospitals.

Discharge and follow-up

- **Inappropriate discharge of patients** with unstable vital signs and ongoing clinical features, outpatient clinics unavailable, 'diagnostic momentum' influencing discharge decisions.
- **Poor communication** with the patient and their GP, reports not available for the GP after discharge, not following up abnormal results.

What can we do to control risk factors here in the Victorian health system?

The data analysis and literature review showed the types of risk factors involved in adverse events. We wanted to know what specific steps we could take, here in the Victorian health system, to reduce the likelihood of events and the severity of adverse consequences for patients.

We used focus groups of clinical practitioners and health service managers to examine the risk factors we'd found. We drew on their expertise and experience to dig into the root causes. We asked them to propose interventions that were appropriate for the Victorian health system and the institutional structures and cultures of health services.

Focus groups with clinical practitioners

The members of our focus groups put together a long list of 28 potential interventions which they believed, based on their experience and professional knowledge, would make it easier for clinicians to make decisions in the emergency context.

The focus groups discussed how some of these interventions would help address frequent and high-risk presentations such as:

- neurological type presentations
- back pain, including patients with red flags
- abdominal pain
- minor trauma such as fractures and wounds.

Interventions considered included those at the point of care, such as telehealth expansion, electronic decision support and escalation triggers.

Other interventions were designed to build clinicians' knowledge and awareness of current issues in the health system. These included training for staff, communities of practice, and specific modes of communication and training such as online modules and monthly newsletters.

Participants were then asked to rank the interventions according to how effective they would be compared to the cost and ease of implementation.

In the workshops, participants analysed root causes, proposed interventions and discussed their experience of effective clinical decision making and changing health care systems and processes.

What our focus group participants told us

Support clinical decision making

- " ... [Tools and checklists] need to be in combination with other interventions, such as clinical pathways ... "
- " ... Clinical pathways can be challenging to implement due to diversity of patients and symptoms, rotating staff and their varying levels of expertise. Hard to get acceptance by the [emergency department] quality unit ... "
- " ... Start from a basic level of standards and allow each different health system to add/amend; however, have governance oversight. [There is] so much variation [on guidelines] across the state that it's so hard to standardise, but we should agree on the baseline ... "
- " ... [From a rural perspective] telehealth is amazing, including VST Stroke services. We can move through patients more efficiently. It provides a more streamlined process as we don't have some specialists [in our facility], but can access specialist advice through telehealth services ... "
- " ... Checklists must be used in combination with clinical signs ... "
- "...Access to experience is probably one of the biggest challenges ... "
- "...[Ensure] collaboration between nurses and doctors when developing checklists/standardised forms criteria ... "
- "...Pathways are not the be all and end all; they can be useful, but care must be taken so as to not allow clinicians to diagnose by just pathways ... "
- " ... [It is] very difficult to get agreement and consensus on a particular guideline or pathway. Endorsement is key ... "
- " ... There are more junior nurses triaging and there is not much time during the triage process ... "
- " ... [In rural settings] it has been very helpful in accessing specific services. If we have a diagnostic question, it's great to bounce ideas/get support ... "
- " ... Need a dedicated telemedicine role [as most times] the person giving the advice is also on clinical duty and it's hard to manage both ... "

Make information available at key points

- " ... [What is required is] being able to send a clear message, know when it has been read, whether the photos have been viewed and that you have texted the right person, while not getting interrupted when you are seeing patients ... "
- " ... So many steps along the way where information can get lost or misconstrued ... "
- " ... Ease of use is the main thing; if the solution isn't easy to use, any existing solutions or workarounds (e.g. WhatsApp) will continue to be used ... "
- " ...[Currently implemented] technology is clunky, so people default to WhatsApp, and confidentiality concerns are often ignored ... "

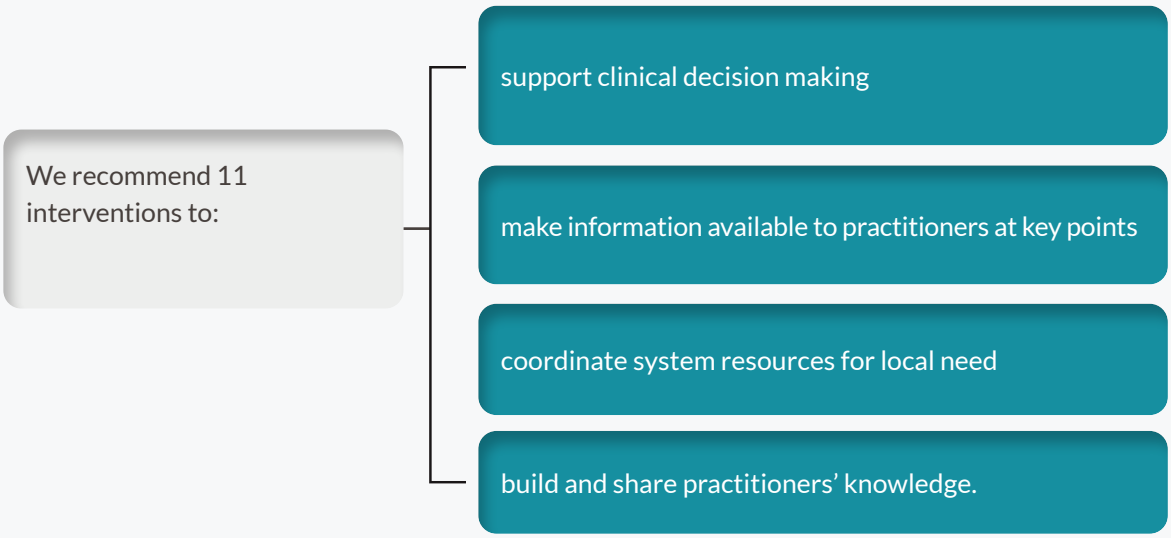
Better mobilise system resources

- " ... if I had one thing to choose it would be centralised coordination of acute, non-critical patient transfers ... "
- " ... [the system would benefit from] clear referral pathways and accountability ... "

Build and share practitioners' knowledge

- " ... It feels like each hospital is reinventing the wheel. We don't share our initiatives and we are replicating methods in different hospitals ... "
- " ... [Our staff] don't know where the guidelines are and how to look for them ... "
- " ... [We] want to reach out to other institutes to learn from them, but don't know how to go about it. It's not easy ... "

The interventions we recommend



The interventions recommended here rely on the knowledge and experience shared in focus groups, backed by the findings of the literature review. They target the key issues highlighted in our data analysis and prioritised by the health sector.

While we focused on interventions into decision making, escalation, communication and learning, we stress that to succeed, these recommendations must be part of a program of action that is wider than the scope of our project. In *Emergency and urgent care: The long-term system opportunities* the project partners have stated their position on this.

These interventions will need leadership from people across the system: in hospitals so that measures will be adopted and evaluated, in the Department of Health so that effective interventions are scaled up, and in partnerships with other health sector agencies with whom these risks are shared.

They will also need to involve patients and their carers—the consumers of health services being provided in emergency departments and urgent care centres. Decision making needs to be shared. Health care services need to make sure practitioners have the skills and time to take into account linguistic and cultural diversity, communication skills, health literacy and cultural experiences of the health system—all of which affect how patients participate in their own care.


"I can't stop thinking I should have gone to ED after seeing the ophthalmologist – I knew it was urgent from my experiences with stroke survivors."

Patient story

Susan, 47

When Susan, 47, became dizzy and couldn't see out of her right eye, she recognised that they were potential symptoms of a stroke. "A colleague took me to ED, where I waited most of the afternoon for a CT scan but nothing showed up. I was diagnosed with a migraine, referred to an ophthalmologist and sent home," she says.

However, the next day her sight had still not returned. "I saw the ophthalmologist who referred me to the TIA clinic and told me I'd be seen very quickly but by the following day I'd heard nothing." Susan called the clinic but was told the next available appointment was in a week's time. "I insisted it was urgent and managed to get an appointment for 2pm that afternoon but by 12.30pm it was too late – I was having a stroke," she says.*

Susan was with her mother and a friend, both healthcare support workers, when she suddenly experienced weakness down one side and a loud ringing in her ear. Her mother dialled 000 but the ambulance took 30 minutes to arrive.

"After I told the ED doctor about my appointment at the TIA clinic, he insisted that I had to go, despite the fact that I was clearly unwell. Perhaps because I didn't have the classic face-drooping, he didn't believe I was having a stroke," she says. "During the appointment my eyesight deteriorated, I was nauseous, my balance went and I couldn't sit upright in the wheelchair. I was taken back to ED."

Tests finally confirmed that Susan had had a stroke. "I can't stop thinking I should have gone to ED after seeing the ophthalmologist – I knew it was urgent from my experiences with stroke survivors," she recalls.

Susan can no longer work after the loss of vision on the right side of both eyes, a condition called hemianopia. "I've lost some of my sight, I can't work or drive and I suffer from dizziness, headaches and low confidence. I'm lucky that I can still be there for my son, nine, and daughter, four, but I worked for the NHS for 29 years and know my stroke shouldn't have happened. Staff don't have enough knowledge of TIA. They need to be supported to understand TIA so a stroke like mine can be prevented," she says.

* *transient ischaemic attack*

This patient story from the Stroke Association in the United Kingdom was taken, with minor changes, from https://www.stroke.org.uk/tia

Give clinical practitioners support at the live, critical point when they are deciding the best course of action in a situation of limited information

1

	What we need to do	Who would be involved
Design and adopt new bundles of care for high-risk presentations to help practitioners rapidly assess a patient, choose the appropriate clinical pathway, and provide follow up care after discharge. Where feasible, upgrade hospital electronic health record systems so that bundles of care are integrated into the data entry workflows.	New bundles of care would be designed and developed for neurological presentations and back pain first. Health services with electronic health records systems that can be upgraded would integrate bundles of care into their data entry workflow. Where the health service cannot do this, they would integrate bundles in low-tech ways. The approach would be evaluated and applied again—with lessons learnt—to produce bundles of care for other presentations, and make them easy to use.	VMIA, SCV and ACEM will support the design and development of bundles of care. Clinical practitioners from health services across the sector will be asked to provide subject matter expertise. Clinical managers, the board and executive will be asked to facilitate adoption of the bundles of care in their health service. Victorian health services use a range of systems, electronic and otherwise. Clinical managers, the board and executive will also be asked to integrate the bundles of care into their electronic health record systems where that's available and feasible. The Department of Health and other agencies and professional bodies will be asked to support design, development and adoption.

A bundle is a small, straightforward set of actions— generally three to five — that, when they are all reliably performed, have been proven to improve patient outcomes.
http://www.ihi.org/resources/Pages/ImprovementStories/WhatIsaBundle.aspx

Examples of current good practice

A sepsis bundle of care, developed by SCV in cooperation with 30 emergency departments, was introduced to 12 more emergency departments and 20 urgent care centres in 2018.

The outcomes:

- 88% improved recognition of sepsis at triage
- 58% improvement in timely administration of intravenous antibiotics
- 43% decrease in transfer to a higher level of care (inter-hospital transfer or transfer to ICU/high dependency unit).

2

Simplify and standardise clinical guidance material, such as guidelines, checklists, flowcharts, so that they are easy for practitioners to use, and improve access at the point of care.

What we need to do

Guidance would need to be identified, or new guidance prepared that is simple and specific to the task that needs to be done at a particular point in the patient's journey.

Ideally, all health services will adopt the same guidance material and, if the material is updated, adopt it at the same time.

Health services would also need to modify information management systems, whether they are electronic or paper-based, to make the guidance material easy to access and use.

This will involve:

- seeking out examples of best practice and consulting with clinical practitioners
- developing a model for designing and developing guidance material
- agreement to adopt new guidance consistent with others across the Victorian health system
- changes to local information management systems

Who would be involved

Clinicians and clinical network representatives will lead the work to simplify and standardise guidance material.

Clinical practitioners from health services across the sector will be asked to provide subject matter expertise.

Clinical managers, the board and executive will be asked to support changes to management systems so that guidance material is easy to access.

SCV, ACEM and VMIA will support design, development and adoption.

The Department of Health and other agencies and professional bodies will be asked to support design, development and adoption.

Examples of current good practice

The Royal Children's Hospital publishes clinical practice guidelines on a dedicated and easy-to-find webpage on its website:

https://www.rch.org.au/clinicalguide/.

One example is a criteria-led discharge guide for specific conditions. The process includes continuous improvement and education, with nurses required to study these conditions in detail before being assessed and qualified. The process is also measured and audited through the electronic medical record.

The Austin publishes compact one-page guidelines that detail risk assessment and initial management of common poisonings and envenomations on a dedicated and easy-to-find webpage on its website:

https://www.austin.org.au/clinical-toxicology-guidelines/

Clinicians can also download an app to use the guidelines.

Eighteen emergency departments in the Victorian health system now use a shorter, evidence-based process known as an 'accelerated diagnostic pathway' for particular cardiac presentations. SCV developed it to help clinicians assess patients more efficiently, ease patients' anxiety and reduce their time in hospital. SCV's Emergency Care Clinical Network is also developing standardised guidelines for a range of clinical conditions:

https://www.bettersafercare.vic.gov.au/clinical-guidance/emergency

Queensland Health has published clinical pathways on a dedicated, easy-to-use web page of its Clinical Excellence Queensland website:

https://clinicalexcellence.qld.gov.au/resources/clinical-pathways

The New South Wales Emergency Care Institute has published emergency procedures on a web page as well as a dedicated app for clinicians to access on their mobiles:

https://aci.health.nsw.gov.au/networks/eci/clinical/procedures

3	What we need to do	Who would be involved
Agree and adopt criteria to escalate patients who make an unplanned return to the emergency department or urgent care centre to the attention of a senior practitioner to support decision making.	Criteria would need to be definite, unambiguous and also written in a way that empowers less experienced clinicians and nurses to escalate a patient for senior decision making support, when the most appropriate management plan for that patient is unclear. Those criteria would trigger a process of escalation to a senior decision maker. The health service would define that process for their organisation. The same criteria would be used in all emergency departments and urgent care centres, though the escalation procedure would be specific. Senior practitioners, as well as junior clinicians and nurses, will need to be aware of the criteria and procedure.	Clinicians and clinical network representatives will lead the work to develop criteria. The Department of Health will be asked to endorse these criteria for health services to implement locally. Clinical practitioners from health services across the sector will be asked to provide subject matter expertise and test the criteria. Clinical managers, the board and executive will be asked to support adoption of the criteria and develop procedures appropriate for their circumstances. SCV, ACEM and VMIA will support design, development and adoption. The Department of Health and other agencies and professional bodies will be asked to support design, development and adoption.

4

	What we need to do	Who would be involved
Expand telehealth so that it includes decision support from senior and specialist practitioners for patients who need non-critical care.	Clinical practitioners already use telehealth to get help from experts with decisions about critical care. The work here is to scale up this model to include non-critical care.	Rural and regional health services, the Department of Health and Ambulance Victoria will lead the work to expand the current model already used for critical care. Clinical practitioners from health services across the sector will be asked to contribute their experience, co-design solutions for scaling up, and participate in testing. Clinical managers, the board and executive will be asked to support the expansion. VMIA, SCV and ACEM will support design, development and adoption. The Department of Health will be asked to fund the expansion and also support design, development and adoption.

Examples of current good practice

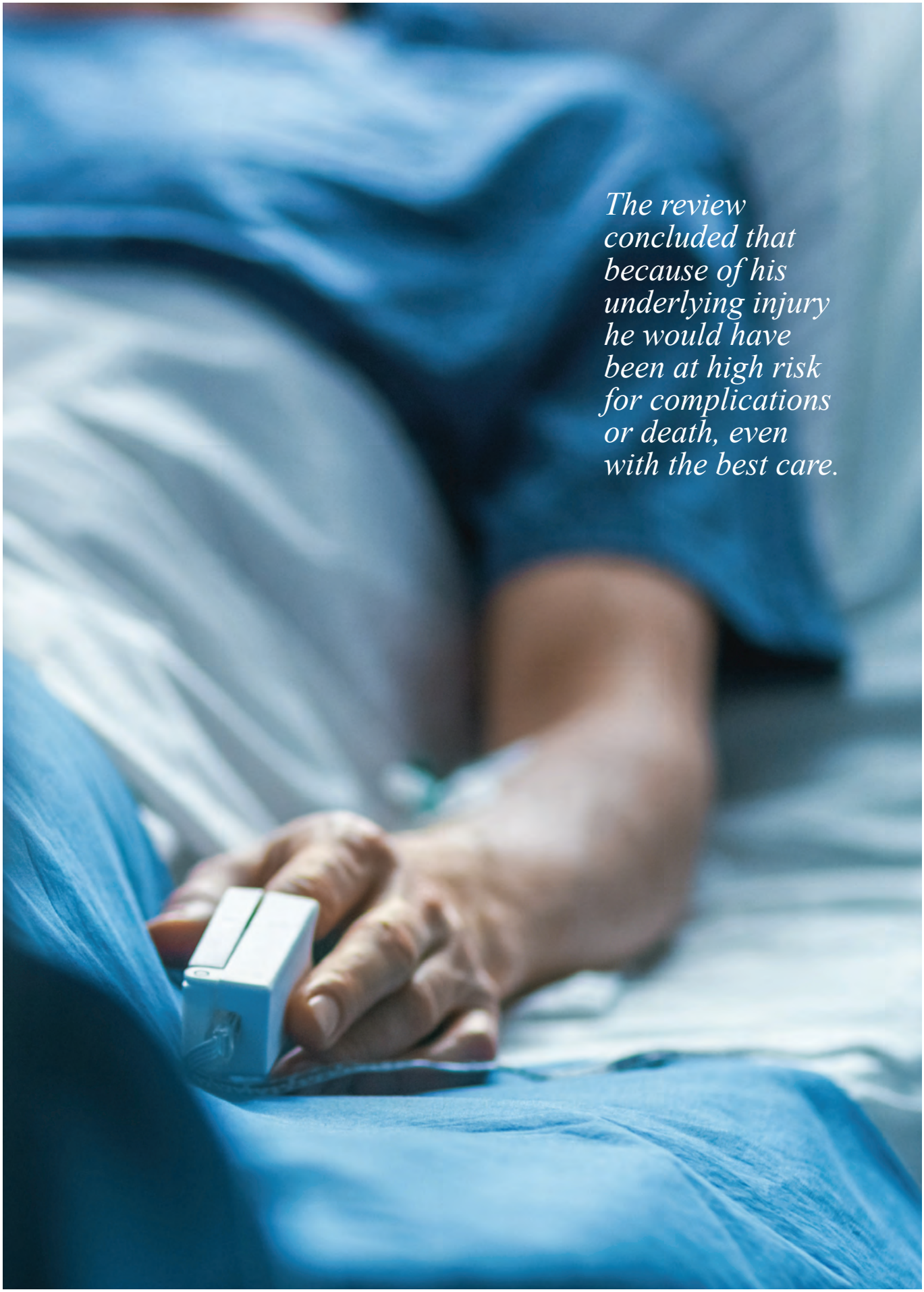
Adult Retrieval Victoria, part of Ambulance Victoria, provides advice, coordination, retrieval and critical care services with a 24-hour phone line.

The Royal Children's Hospital runs PIPER, Paediatric Infant Perinatal Emergency Retrieval. Clinicians call a dedicated phone line for emergency paediatric, neonatal and perinatal advice, retrieval and referrals.

In 2018, The Florey Institute finished development and testing of a videoconference service across 16 hospitals which provides 24-hour access to a stroke neurologist. The Victorian Stroke Telemedicine service is now run as an ongoing service through Ambulance Victoria.

Western Australia's Emergency Telehealth Service provides 24-hour emergency medical support for 79 small country hospitals and nursing posts across the state.

Gippsland Southern Health Service runs a telehealth service, which it developed in partnership with SCV, to improve access and timeliness of after-hours care and reduce the risk of adverse events due to not being able to consult overnight.


The review concluded that because of his underlying injury he would have been at high risk for complications or death, even with the best care.

Patient story

Roy Pappas,* 63

Roy Pappas, 63 years old, was a truck driver with a significant past history of heart disease. After being involved in a high-speed rollover accident he was taken by ambulance to an emergency department in a large regional hospital with concerns about injuries to his neck, right shoulder and wrist and, potentially, a head injury. He was seen by the emergency department and surgical registrars who arranged for CT scans. The radiologist informed the emergency department registrar of the results which showed bone fractures in the neck.*

More than four hours later the emergency department registrar requested a second round of CT and also MRI scans to rule out damage to blood vessels.

While being scanned, Roy made gurgling noises and showed signs of reduced consciousness. He was taken back to the emergency department before the scan could be completed and intubated to protect his airway. After being refused by two non-trauma centres, the emergency department registrar contacted Adult Retrieval Victoria who dispatched a crew to transfer him to the trauma centre.

Meanwhile his second round of CT scans were performed and reported nearly 12 hours after arriving at the emergency department and showed blood supply to the brain was blocked because of injuries to his neck vertebrae and the artery supplying blood.

Roy was transported by helicopter to a major trauma centre in the city where it was determined that he would not survive his neurological damage. He was given palliative care and died three days later in the intensive care unit.

The review concluded that because of his underlying injury he would have been at high risk for complications or death, even with the best care.

However, an in-depth review conducted by the hospital noted the significant delay in ordering subsequent imaging. It also observed that the emergency department's senior doctor was unaware of the initial CT results, the delay in ordering subsequent imaging or the registrar's unsuccessful efforts to transfer Roy.

The review recommended that:

- *medical staff be educated about their medico-legal obligations regarding documentation*
- *the emergency department's senior doctor oversee the categorisation of patients to category 1*
- *trauma referral pathways should be incorporated into local policy*
- *Adult Retrieval Victoria posters should be displayed in resuscitation rooms*
- *the policy for nursing and medical requirements when transporting critically ill patients out of the department should be updated.*

A subsequent review by the coroner's prevention unit expressed dissatisfaction that systemic issues were not sufficiently remedied and recommended the review be repeated with an external expert.

**We have preserved the family's privacy by not using the patient's real name. For this patient story, we have relied on coroner's reports in the public domain with light editing for clarity.*

Make whatever information we do have about a patient available to clinical practitioners and support staff at key points along the patient's journey

5

Implement encrypted closed-loop messaging services for communication between staff within a health service, ensuring that it meets privacy and security standards, links to electronic health record, and has robust governance.

What we need to do

System requirements would need to be defined.

A suitable messaging service would then be selected, tested in a limited number of emergency departments or urgent care centres.

If it meets requirements, it would need to be rolled out in the whole health service and scaled up across the state.

Who would be involved

VMIA, the Department of Health and health services will support delivery of this recommendation.

Clinical practitioners from health services across the sector will be asked to help define the requirements and test the service.

Clinical managers, the board and executive will be asked to support the roll out in their health service.

The Department of Health will be asked to endorse the proposed system requirements and support their adoption by health services.

ACEM and SCV will support design, development and adoption.

Examples of current good practice

VMIA's Research and Innovation Program trialled a secure instant messaging mobile app, designed specifically for clinical settings, with Monash Health. Since then, Western Health have implemented the application for clinical communication and clinical image sharing between their clinical staff.

Staff at the Royal Children's Hospital use the organisation's electronic medical record mobile app for secure information sharing and recording. The app includes an encrypted messaging system for communication between clinicians, supports clinical photography and allows relevant information to be saved to a patient's medical record.

6

Trial expanded digital notification systems to capture and follow up abnormal laboratory test and radiology results, in addition to direct phone call for urgent results.

What we need to do

User and technical requirements would need to be defined.

The system would then be designed and tested as a pilot in a limited number of emergency departments and urgent care centres.

If it meets requirements, then it will be rolled out to other departments and centres across the state.

Who would be involved

SCV, ACEM and VMIA will support the design, development and testing of the digital notification system in cooperation with participating health services.

Clinical practitioners from participating health services will be asked to help define the requirements and test the service.

Clinical managers, the board and executive will be asked to support adoption of the notification system.

The Department of Health will be asked to support design, development and adoption.

Examples of current good practice

In some health services and for patients who have opted in, My Health Record has been linked with local electronic medical records. The clinician treating the patient can view test results, patient medications and discharge summaries, which might not otherwise be available if a provider or service is not open, for example, late at night.

Use central knowledge of the whole state-wide system better to mobilise resources and provide the care that the clinical practitioner has decided is needed

7

	What we need to do	Who would be involved
Expand the current services that coordinate critical patient transport to include specific non-critical patients so that practitioners can make one call to escalate for further care, identify which health service in the state has the capacity to give that care, and coordinate their transport.	As the recommendation implies, a service to escalate, identify a receiving hospital, and transport critical care patients is already in place. The work here is to scale up this model to include specific types of non-critical care. These new types would be identified as part of developing the model.	The Department of Health will lead the work to expand the current model for critical care in cooperation with Ambulance Victoria and health services. Clinical practitioners from participating health services will be asked to help decide which conditions or presentations should be included first and test the service. Clinical managers, the board and executive will be asked to support adoption of the expanded service. VMIA, SCV and ACEM will support design, development and adoption. The Department of Health will be asked to fund design, development and adoption.

Examples of current good practice

Adult Retrieval Victoria, a department of Ambulance Victoria, provides clinical coordination, retrieval and critical care services. Clinicians can request advice or a retrieval by calling a 24-hour phone line.

When a transfer is needed, ARV organises transport, together with the appropriate clinical staff to accompany the patient, and a suitable critical-care bed at the receiving hospital.

The Royal Children's Hospital runs PIPER, Paediatric Infant Perinatal Emergency Retrieval. Clinicians call a dedicated phone line for referrals and retrieval. Clinicians use the service to facilitate the transfer of major trauma patients between hospitals.

Build the knowledge of practitioners so that they are better prepared for the types of events that are likely to occur

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	What we need to do	Who would be involved
Publish and share lessons learnt from adverse patient safety events in a variety of formats to communicate patient stories, case studies, best practice and other insights.	Information about adverse events would need to be collected from health services across the state, analysed, written into a narrative suitable for the chosen medium, with lessons presented clearly, unambiguously and credibly for this audience. Patient and clinician confidentiality and privacy would need to be preserved. The content would need to be published to an appropriate standard and distributed on channels that clinical practitioners pay attention to.	SCV and The Communiqués will produce, publish and distribute lessons learnt from adverse events. VMIA, ACEM and SCV will support sharing of lessons learnt through their networks and communication channels.

Examples of current good practice

SCV publishes an annual report on sentinel events. They're also using a range of formats and modes to increase sharing of lessons learnt from sentinel events.

The Communiqués are a series of newsletters and podcasts funded by VMIA that present in-depth investigations of coroner's cases for clinical learning (https://www.thecommuniques.com/).

The New South Wales Emergency Care Institute has Red Flags Modules, which it publishes to "de-stigmatise risk and failure, and to promote sharing experiences and continuous learning".

The United States Department of Health and Human Services publishes expert analysis of medical errors (reported anonymously), interactive learning modules, and commentaries written by patient safety experts. These are published monthly on its Patient Safety Network website.

9	What we need to do	Who would be involved
Establish a forum for discussion and sharing of current issues, emerging trends, examples of best practice and learning from adverse events.	Event infrastructure and communications for in-person and virtual attendance and participation would need to be set up. It would need to be suitable for a range of options, such as community of practice, grand rounds and committees. Resources would need to be given to developing content and coordinating speakers.	In partnership, SCV, ACEM and VMIA will establish the forum, plan events, invite speakers and other participants, publicise, facilitate discussion, and publish and distribute follow up content and communications.

Examples of current good practice

The Victorian Trauma Grand Round is a forum for healthcare professionals involved in trauma care in Victoria to explore and discuss trauma management.

Statewide Mortality and Morbidity Committees - Victorian Audit of Surgical Mortality (VASM) is a collaboration between the Victorian Government's Department of Health and the Royal Australasian College of Surgeons. It reviews deaths associated with surgical care. It also runs workshops and seminars for practitioners.

Safewards is a clinical model designed to reduce conflict and containment and increase a sense of safety and mutual support for staff and patients in mental health services. A community of practice was set up in 2016 at the same time as the model was introduced to support staff to share knowledge and resources. It's coordinated by its members and provides a supportive environment to discuss ideas and challenges.

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	What we need to do	Who would be involved
Establish an online library of resources to improve assessment and management of high-risk presentations, including case studies and evidence-based recommendations for ongoing training and education.	Resources would need to be given to collecting and producing good-quality content and publications. Users will need to be consulted about their requirements. Also required would be a content management system and a user interface with sophisticated search functionality and easy-to-learn navigation.	Clinical network representatives with SCV and ACEM will work on defining system requirements and setting up the online library. ACEM will host and maintain the resource library.

Examples of current good practice

The Rural Urgent Care Nursing Program, funded by the Department of Health, runs an online library of resources for nurses working in regional urgent care centres. It publishes clinical practice guidelines, training modules, wellbeing resources, journal articles and books and videos and podcasts.

(https://www.emergencyeducation.org.au/rucncdp/resourcelibrary/)

The New South Wales Emergency Care Institute has an online library of clinical tools for practitioners, including guidelines to support nurse-delegated emergency care by specially trained nurses for less urgent presentations in rural and remote areas.

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	What we need to do	Who would be involved
Improve how data about adverse patient safety events are presented to clinicians and managers so they can better identify opportunities to reduce risk and improve quality of care.	Technical requirements will need to be defined for the design of the platform and the feed of live information to the user interface. Users will need to be consulted about their requirements. A content management system and a user interface with sophisticated search functionality and easy-to-learn navigation will need to be chosen.	VAHI will continue to implement this recommendation. VAHI is under the remit of the Department of Health. The department will be asked to fund this work.

Examples of current good practice

Victorian Agency for Health Information (VAHI) provides quality and safety performance information on a dedicated web page, which is based on data submitted by Victorian public health services to the Department of Health.

The New South Wales Clinical Excellence Commission publishes a single point of access to data from several sources together with standardised and customisable tools that clinicians and hospital managers can use to understand current outcomes, trends over time, unwanted clinical variation, harm and outcome measures of improvement innovations.

What's our future state?

Clinicians and consumers recommended these interventions based on data, best practice literature, and expert opinion. Our next step is to work with our partners, to formalise funding arrangements, and to set up the program of work that is needed for successful implementation.

We'll pilot interventions and evaluate their effectiveness. Where they deliver benefits, we'll learn from that success.

We'll work closely with our partners to spread effective interventions across our health system and to share these with other jurisdictions. By sharing what we learn and supporting adoption of improvements, we can deliver benefits in the many contexts where emergency and urgent care clinicians provide care.

How will we know that we're succeeding?

Measurement and evaluation of outcomes will be embedded in our delivery approach. One obvious measure would be the number and type of adverse patient safety events and claims recorded in VMIA's and SCV's data.

It is the nature of risk though that we might control the risk effectively but not change the number of adverse events. Risk factors interact together in complex ways. Efforts to control one factor may make the event less likely, while the risk stays the same—or even increases—because of other factors.

In this case, many of those other factors are systemic. Workforce shortages, the availability of beds and other resources, communication issues, information management—systemic issues at the level of the hospital and the whole health system—put more pressure on emergency practitioners as they try to do something that is already difficult.

Many working in the health system now believe that this is a system under heavy strain. What we have recommended here must be seen as part of a bigger picture of change, which we've set out in *Emergency and urgent care: The long-term system opportunities.*

This doesn't mean we will ignore the numbers. And, though we cannot address all risk factors, we can still address some, which we believe will make a difference.

Now is the time to act. Our population is ageing. The burden of chronic disease is increasing. Population health risks are shifting because of climate change. We need to prepare for change.

What signs can we expect to see that the interventions we've recommended here are effective?

One of those signs—in fact, it is our future criterion of success—will be the quality of the patient experience. This is measurable. When they're in our emergency departments and urgent care centres, are they involved in decisions about their care and treatment as much as they want to be? Do they feel confident in the safety of their care? Are risks explained to them? Are their requests for attention listened to? Do they get the interpreter they need?

Another indication of change will be the experience of the clinical decision makers. Our recommendations will make a difference that could be tracked in patient outcomes, the quality of documentation, timeliness of escalation and transfer, the consistent use of bundles of care, adoption of new measures, the culture of the health service, as well as the number and type of adverse events that occur.

We would also expect to see signs of 'the system' learning. If one practitioner or health service learns that a new procedure is effective in certain circumstances, then we would expect to see that knowledge shared and scaled up and across the state so that it was applied generally. Spontaneous uptake of new knowledge and better ways is how we will know that change is being sustained.

It has been estimated that adverse events add 13-16% to a health services' hospital costs, so effective measures will free up money to improve quality and safety in that hospital. Lower costs of care for people who've suffered an adverse event will mean the health system as a whole has funds for other initiatives.

Finally, we cannot underestimate cultural change. With this report, we hope to change the narrative about clinical decision making—or at least start that change. We want stakeholders in the sector to understand that clinical practitioners are making their decisions in situations of considerable uncertainty and that we can do something to reduce it. This ought to be one of the chief goals of policy: to reduce uncertainty in high-risk situations of care.

Above all, we want patients to be part of this cultural change. The better they understand the diagnostic process, and the bigger picture of clinical decision making, the better their care will be. Our challenge will be to make sure that everyone can participate in those decisions about their care: Indigenous Victorians, in particular, and also people of all genders and all linguistic, cultural and religious heritages, regardless of their wealth. Care in extremity must be available to us all, equally.

Now is the time to act. Our population is ageing. The burden of chronic disease is increasing. Population health risks are shifting because of climate change. We need to prepare for change.


14:00
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Vrijeme
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