



# Clinical Insights

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# A message from Francesca

## Interim Medical Director



By **Dr Francesca Tullio**, Interim Medical Director



Welcome to the Spring/Summer edition of *Clinical Insights*. In this edition, we're excited to share some fantastic articles, including a great update on the STAY trial by Daniel Okyere, an amazing outcome highlighted by Ella Soydas in the Best Care Story, some fabulous tips on trauma by Prue Snedden, and a thought-provoking read from Penny Grattan in "Differentials".

Reading Penny's article made me reflect on our role as clinicians in the health care system. Just like in the ED setting, paramedics and triage practitioners are highly skilled at risk stratification. As we take a history, perform an examination, look for (and note) red flags, and are on alert for signs of deterioration, we are constantly assessing and re-assessing where the risk to our patient lies.

This remains true for all patient interactions, from trauma to mental health, paediatrics to geriatrics.

Some patients we see declare themselves immediately into

Trauma can be quite deceptive. It may seem straightforward. Treat immediate life threats and minimise out-of-hospital time. However, the decision-making process can also be hard.

a certain risk category and have an obvious, logical treatment and disposition plan. Others are more wily and harder to pin down. For instance, the patient who 'looks stable' but then precipitously declines on route to the hospital, the ED, the short stay, the ward, or even worse, when left at home alone.

Trauma can be quite deceptive.

It may seem straightforward. Treat immediate life threats and minimise out-of-hospital time. However, the decision-making process can also be hard. Do we transport to the nearest Trauma Centre, or go to the closest hospital for stabilisation? Certainly, transporting a patient to a Trauma Centre will provide definitive care...if they make it alive. There's no point doing CPR if the heart is empty. Ego has no role in patient centred care. No FAST on its own has ever saved a life, but well directed pressure on a bleeder while transporting may well do just that.

Trauma is an interesting beast. It's the obnoxious, showy younger sibling who wants all the attention. Still, it isn't more important or significant than the older (geriatric) child with sepsis, or the troubled middle child with mental health issues.

As health professionals, we can protect our patients – and our registration – by staying within the safety barriers that guide difficult decision-making. This means adhering to state trauma guidelines and our Clinical Practice Guidelines (CPGs). Equally important in protecting our patients is our clinical acumen, which is derived from experience and shared decision-making.

The state trauma system was developed for a reason, because we can't serve our patients as well when we are separate entities. This is as true for individuals as it is for health services.

So, let's remember to:

- Involve others
- Ask opinions
- Notify early
- Work collaboratively.



I hope you enjoy this edition, crafted with skill and dedication by the *Clinical Insights* team.

With warm regards,

**Dr Francesca Tullio**  
Interim Medical Director





# Trauma care in focus

## 10 considerations for clinicians



By **Prudence Snedden**, Specialist Education and Training – Adult Retrieval  
Master in Traumatology



### 1 Mental readiness

Develop a method to calm your mind and focus before arriving at complex cases. Establish a personal routine—such as deep breathing, visualisation, or mindfulness. This helps you maintain clarity and composure in high-pressure situations.

### 2 Mechanism of Injury (MOI): Assess forces and predict injuries

Understanding the physics involved in trauma can provide insight into injuries and their severity:

- **MOI evaluation:** Understand how different forces influence injury types. For example, knowledge of the mechanics behind various pelvic fractures— anterior-posterior compression, lateral compression, and vertical shear—allows clinicians to anticipate associated risks and predict potential injuries more effectively.
- **Clinical assessment:** Look beyond visible injuries to consider deeper trauma. Use knowledge and clinical experience to hypothesise unseen injuries and adjust treatment based on evolving signs.

### 3 Reflective practice: Continuous learning from trauma cases

Trauma care extends beyond initial intervention. Each case offers opportunities for learning and improvement. When possible, follow up on trauma patients to evaluate the accuracy of your initial assessment. Reflect on injury progression, outcomes, and complications to continually refine your assessment and predictive skills.

### 4 Clinical history and comorbidities

A patient's medical history is crucial for guiding trauma related care. The increasing prevalence of older adult necessitates a thorough understanding of their unique vulnerabilities. For instance, patients with chronic obstructive pulmonary disease (COPD) may exhibit reduced physiological resilience in the setting of chest trauma. While those on anticoagulant therapy are at a heightened risk for significant bleeding from even minor trauma. It is essential to tailor treatment plans to anticipate and address these potential complications effectively.

### 5 Full exposure and maintaining warmth

More is missed from not looking than not knowing. Conducting a thorough physical examination requires complete exposure to uncover hidden injuries. However, it is essential to prevent hypothermia, promptly re-cover and warm the patient after the assessment to minimise complications related to temperature loss.

### 6 Haemorrhage control: Early, effective intervention

Controlling haemorrhage early and accurately is essential to prevent exsanguination:

- **Direct pressure:** The best blood is the patient's own. Use targeted pressure to control bleeding before escalating to larger dressings or devices. Avoid excess bandaging, which can obscure bleeding sources.
- **Tourniquets:** Effective haemorrhage control in certain situations relies on proper tourniquet application. Poorly positioned or inadequately tightened tourniquet can allow arterial flow while impeding venous return, increasing bleeding risk through venous congestion. Correct application is painful, necessitating a comprehensive pain management plan that considers the risks in haemodynamically fragile patients.

*Continued over*





# Contemporary trauma care

Trauma care in focus: 10 considerations for clinicians *continued*

## 7 Differentiating respiratory distress: Shock versus tension pneumothorax

Accurate identification of the underlying cause of respiratory distress is crucial for guiding appropriate interventions.

It is vital to differentiate between respiratory distress due to a tension pneumothorax and that resulting from shock in a compensating patient. Misidentifying these conditions can lead to unnecessary interventions which may exacerbate the patient's condition.

## 8 Traumatic arrest protocol: Prioritising interventions based on MOI and clinical assessment

Traumatic arrest protocols provide structured guidance to care, however, understanding the mechanism of injury (MOI) alongside clinical assessment is essential for reshaping intervention priorities. By identifying the most probable cause of arrest, clinicians can optimise their approach, focusing on interventions that address the underlying issue and enhance the chance of successful resuscitation.

## 9 Understanding shock: Hypovolemic, Obstructive, Neurogenic, and Cardiogenic

Correctly identifying the type of shock guides treatment decisions. Focus on what you can reverse or temporise on scene but remember that most patients with trauma will need advanced interventions at tertiary centres.

## 10 Avoiding delays: Provide value adding interventions, prioritising rapid transport after initial stabilisation.

In conclusion, trauma management extends beyond immediate interventions. It requires an understanding of injury patterns, anticipation of clinical progression, and a commitment to ongoing reflection and education to improve patient care. By fostering mental preparedness and systematic approaches, clinicians can enhance outcomes for patients in the setting of trauma.

## Towards maximal gains



By **A/Prof Ben Meadley ASM**,  
Director Paramedicine



Hello everyone,

Welcome to the Welcome to the Spring/Summer edition of *Clinical Insights*.

Over the last couple of months, I've had the fortune to attend several conferences where I presented Ambulance Victoria research projects that showcase the great care we provide for trauma patients. This has included the Australasian College of Paramedicine International Conference, the Aeromedical Society of Australasia Scientific Meeting, and the Australian and New Zealand Trauma Society Annual Conference. It's been great to catch up with many of you from AV who also attend these events, and in many cases present your own fantastic research.

Results from our own research at AV, supported by much of the work being done both locally and overseas, show that it's very challenging at this point to achieve substantial reductions in severe injury and death in trauma patients. This is not for a lack of trying of course. We see many well-run studies conducted in major ambulance services across the world, attempting to discover how we can better our care for this often very unwell cohort of patients.

Major gains in trauma survival occurred between the mid-1970s to early-2000s. During that time, we saw crucial changes like mandatory seatbelt use, random breath testing, vast improvements in vehicle safety, effective public education initiatives – including the famous Transport Accident Commission (TAC) advertising campaign – and the advent of the Victorian State Trauma System. The data clearly shows a significant drop in deaths from motor vehicle accidents over this timeframe, as shown in the image below.

### The challenge ahead

As front-line clinicians, our goal is to find ways to achieve similar improvements in trauma survival and recovery. Current data suggests that specific medical interventions,



procedures, or medications are unlikely to lead to these major gains right now. For example, researchers have looked closely at the value of blood components in prehospital trauma care. While there appears to be value for patients a long way from the hospital or those who are trapped for prolonged periods, a recent UK study suggests that for patients who are suffering major trauma, hypotensive, and can be in a major trauma centre within 30 minutes, crystalloid fluid may be as effective as red blood cells and plasma.<sup>1</sup>

Further, resuscitative endovascular balloon occlusion of the aorta (REBOA) has received much attention. However, the Alfred Hospital paused its use of this procedure a while ago due to patient safety concerns, and a large UK study was halted for similar reasons.<sup>2</sup> Then, recently, a different UK study showed that maybe there are some benefits to partial REBOA that can be explored further.<sup>3</sup> Back and forth we go, but with no major improvements in survival.

Lastly, many of you will have enrolled patients in the PATCH study, which was a randomised controlled trial of tranexamic acid versus placebo (see Ziad Nehme's associated article in this edition). PATCH commenced in 2015, and I was honoured to have enrolled the very first patient in the study whilst working at HEMS 2. To show how much work goes into such a study, it was only published last year, and after an immense amount of time and effort, no clear result was demonstrated. While the interpretation of the results might be an argument for the biostatisticians, what is clear is that TXA did not turn out to be a magic solution to improving trauma survival in cases of critical bleeding.<sup>4</sup>

## Moving forward

So, how can we achieve major gains for trauma patients? With no major clinical interventions or public safety

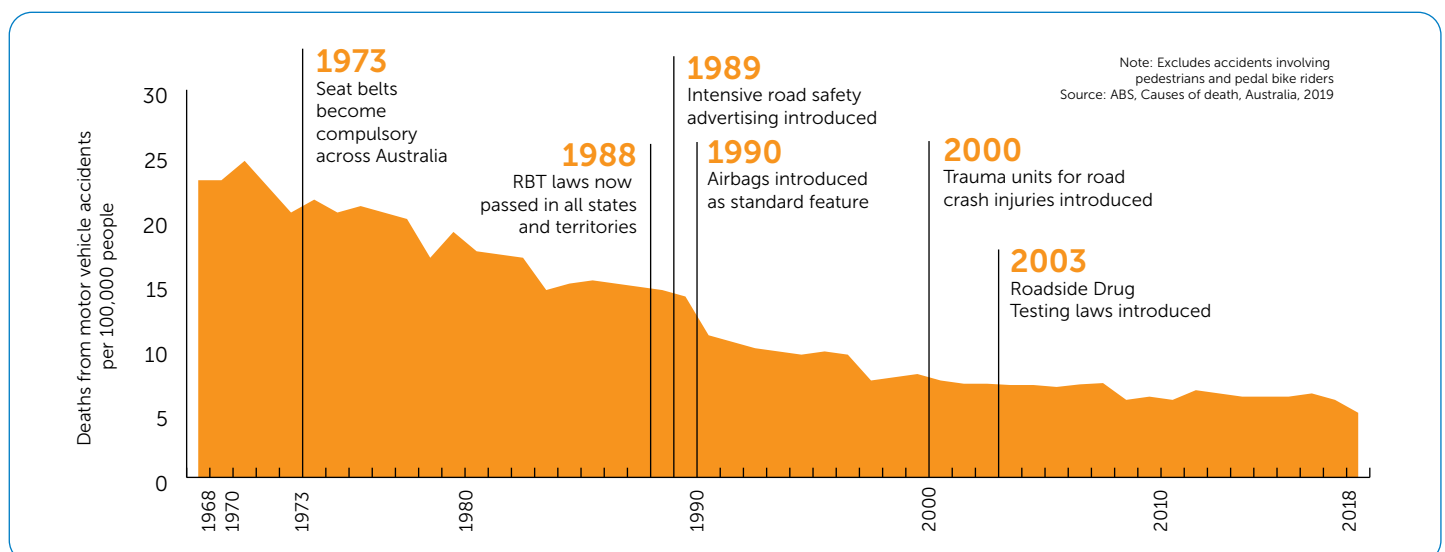
initiatives showing immediate promise to attaining those big percentage improvements, it is up to us to leverage the system to benefit patients. When I refer to the system, it is this complex system that we are working in every day, that we must work our way through in the best interest of these critically unwell patients.

In major traumatic injuries, our priority should be providing life-saving, humane care. If a patient is not trapped, moving them to the highest level of care in the timeliest fashion is crucial. It's also important to activate other parts of the system as early as possible, such as requesting MICA or aeromedical support when needed (see the recent updates to WIN OPS 400). Where a patient can't be transported to a major trauma service in the first instance and will need to be transported to some other type of facility, the AV Clinician and Adult Retrieval Victoria should be notified immediately for secondary retrieval and/or the responding backup diverted to that location. These are concepts you know well, but it's often prudent to keep front of mind the value of moving patients as soon as we, and they, are ready to go.

In summary, managing trauma patients can be very challenging within a complex health system. It's unlikely that specific interventions or medications will provide the gains we seek. When chatting with your teammates about trauma care, think about how you will provide life-saving interventions, communicate, and move (when you can) to leverage our world-leading trauma system. Until the next big percentage gain comes along, it's incumbent on us to maximise the effectiveness of the system we have, and to do the best we can for this patient group.

Thanks always for the excellent care you deliver, and I look forward to seeing you out and about.

**Ben Meadley**  
Director, Paramedicine





# Cutting-edge research

## Pre-hospital tranexamic acid for severe trauma

By **Dr Ziad Nehme**, Director Research and Evaluation



Ambulance Victoria's (AV) paramedics are internationally recognised for leading cutting-edge clinical trials that help shape the evidence-base in out-of-hospital emergency care.

In this issue of *Clinical Insights*, we put a spotlight on 'The Pre-hospital Antifibrinolytics for Traumatic Coagulopathy and Haemorrhage (PATCH) trial' which was published last year. This ground-breaking randomised controlled trial involved ambulance services from Australia, New Zealand, and Germany, although AV's Air Ambulance MICA Flight Paramedics led the charge recruiting almost half of all patients in the trial. The findings have significantly changed our understanding of the evidence-base for tranexamic acid (TXA) in severe trauma and have led to changes in AV's clinical practice guidelines. This once again shows that AV paramedics are not only embedding evidence-based practice into their care, but they are also helping to create it.

### Why is this trial important?

- Between 1990 and 2019, trauma was the leading cause of death in young people across the globe. Most deaths from trauma are caused by bleeding which can be exacerbated by coagulopathy, a dysfunction in the body's clotting cascade that is common in patients with severe trauma and contributes to death. Trauma-induced coagulopathy is often secondary to severe tissue damage and is best described as an imbalance in the body's ability to form and maintain clots.
- Tranexamic acid or TXA is an antifibrinolytic drug that has been used for decades to reduce bleeding risk in patients with trauma, surgery, and gynaecological conditions. Despite common misconception, TXA does not promote clotting. Instead, it inhibits breakdown of fibrin which is essential to the maintenance of clots. To review how TXA works, check out this [short video](#).
- Several randomised controlled trials conducted in-hospital have shown that administration of TXA within three hours of injury can help to significantly reduce short-term mortality in patients with suspected bleeding post trauma or mild-to-moderate traumatic brain injury. The findings of these trials have resulted in the widespread use of TXA as a treatment for suspected bleeding in trauma, including adoption by ambulance services across the globe.

- The major criticism of these trials is that they were undertaken in resource-limited settings. It is therefore unclear if the mortality benefits seen for TXA are the result of the drug-itself, or limited access to modern systems-of-care, such as regionalised trauma services, blood products, surgery, and interventional radiology. Also, as prior trials had not followed up patients long-term, it is not clear if the administration of TXA results in an increase in trauma survivors with good neurological and functional outcomes.

### What did they do?

- The PATCH trial was a phase three, multi-centre, randomised, placebo controlled trial, designed to examine whether prehospital administration of TXA compared with placebo improves six-month outcomes. The trial was conducted in the well-developed trauma-systems of Australia, New Zealand and Germany, with most ambulance services in Australia taking part.
- To determine which patients were at risk of trauma-induced coagulopathy, paramedics were asked to undertake a rapid risk assessment of the patient before enrolment into the trial, using the COAST (Coagulopathy of Severe Trauma) score. The COAST score considers entrapment in a vehicle, systolic blood pressure, body temperature, suspected pneumothorax, intraabdominal or pelvic injury. Patients with a COAST score of  $\geq 3$  were considered to be at high risk for coagulopathy and eligible for enrolment in the trial.
- Paramedics administered either one dose of TXA (1 gram) or placebo intravenously as a slow-push bolus on scene or enroute to the receiving hospital. After hospital arrival, the second ampoule of TXA (1 gram) or placebo was infused over a period of eight hours. The trial was double-blind, meaning that clinicians administering the trial medication were unaware if they were administering TXA or placebo.
- A key strength of the trial was that it followed all patients to six-months, and then assessed their functional recovery using a validated tool called the Glasgow Outcome Scale-Extended (GOS-E). The intent here is to understand more than just long-term survival, but whether the patient can communicate and participate in activities of daily living, such as work, social, and leisure activities. The trial also collected information about death after injury and cause of death.



## What did they find?

- The PATCH trial successfully enrolled 1,307 patients with suspected bleeding after trauma between 2014 and 2021, including 661 in the TXA group and 646 in the placebo group. Characteristics were similar between the two groups, with the mean age being 44 years and approximately 70% involving men. Blunt trauma made up more than 90% of all enrolments, and almost three-quarters of all patients had an initial systolic blood pressure < 90 mmHg. Over one-third of all patients had received blood products before randomisation.
- Paramedics did an excellent job administering the trial with very few deviations from the research protocol. Most protocol deviations were caused in hospital, where a significant proportion (16%) of patients in both groups received open-label TXA by doctors. This highlights the challenge of running placebo-controlled randomised trials in the health care environment, where treating clinicians may favour treatment over the certainty of a control.
- The trial found no improvement in good functional outcome at six-months following enrolment. Whilst the mortality rate at six-months was lower in the TXA group compared with placebo (22% versus 26%), the number of patients who survived with severe disability was higher, giving an equal number of patients with good functional outcome at six-months in each group (54%) – **see figure 1**. These findings appeared to be consistent across subgroups, and were not impacted by the patient's age, mechanism of injury, systolic blood pressure or time to treatment.

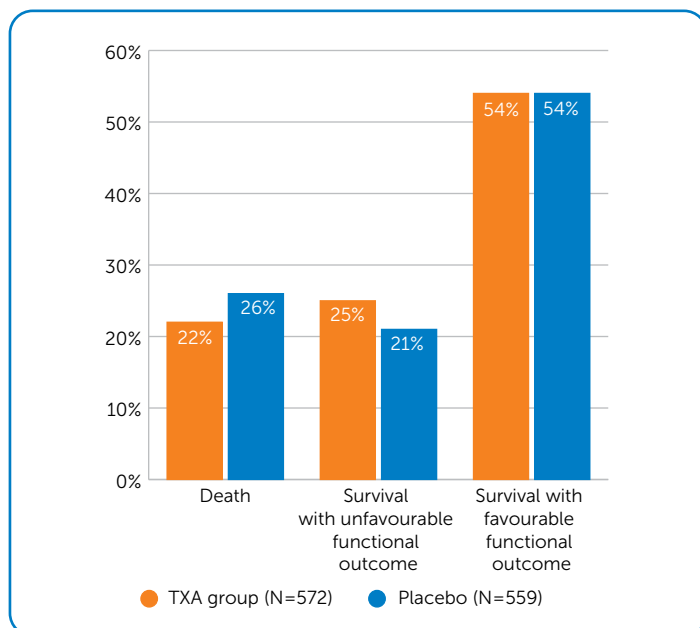


Figure 1: Six-month outcomes for severe trauma patients enrolled in the PATCH trial.

## How does it impact our care?

- Although TXA did not improve the primary outcome of six-month survival with favourable functional outcome, the study has practice-changing implications for major trauma and have already informed treatment recommendations in international guidelines.
- The trial suggests that for every 100 patients with severe trauma treated with TXA compared to placebo, there are approximately four additional survivors at six-months and four additional patients categorised as having severe disability. 'Severe disability' in this context is defined as a patient who is conscious and can communicate but requires the assistance of another person for activities of daily living. The mortality reduction observed in PATCH is similar or larger than earlier trials, which suggests that TXA does contribute to reducing mortality in trauma in well-developed health care systems.
- Although the findings would suggest that TXA should not be administered routinely to patients with severe trauma, it is important to note that some patients who survive following severe trauma may require more than six-months of rehabilitation to achieve favourable functional outcomes. Therefore, we should not rule out that TXA cannot contribute to quality-of-life outcomes after six-months. It is also important to recognise that 'severe disability' is not equal to death, and it is not valid to assume that patients who survive with some form of disability would instead prefer death.
- AV's Medical Advisory Committee have reviewed the PATCH trial and made a cautious but informed decision to introduce TXA for the management of patients with severe trauma into ALS and MICA scopes of practice. Although the administration of TXA is time-sensitive, it should not be prioritised over other life-saving interventions, transport or supportive care interventions. The aim is to administer TXA within two hours of injury, but this should also be balanced against the risk of delaying access to definitive care or other life-saving interventions.

## Want to learn more?

- Read the full-text article at the [New England Journal of Medicine](#)
- Read a recent [systematic review](#) involving AV researchers, exploring the effect of TXA on severe trauma across seven randomised trials.





# Penetrating truncal trauma

## Transport is treatment



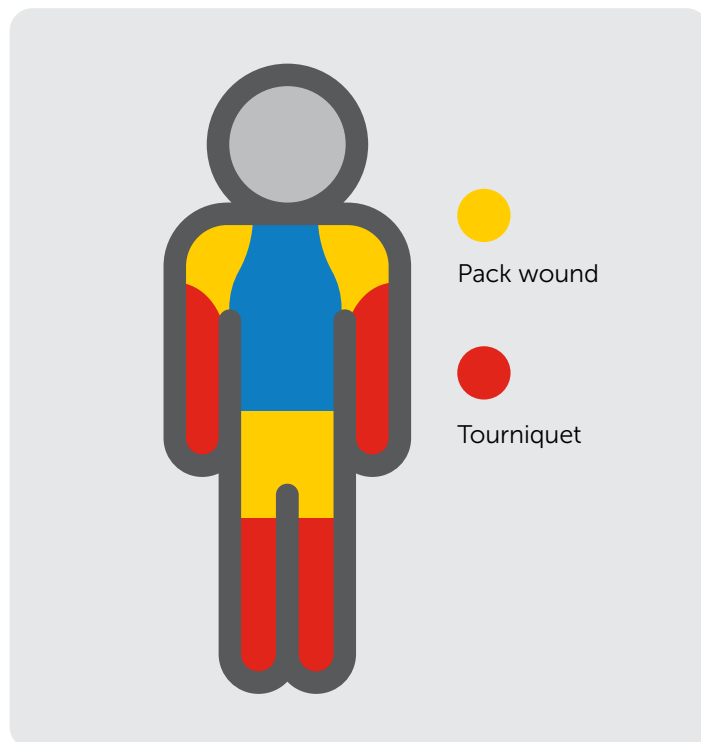
By **Hew Davies**, ALS Paramedic and Peak Best Care Committee Representative and **Prof. Stephen Bernard**, MD FACEM FCICM FCCM, Medical Advisor



While infrequent in Victoria, penetrating truncal trauma (PTT) presents an easily identified subset of patients based purely on mechanism of injury, with injuries located where bleeding cannot be reliably controlled – essentially, anywhere we can't simply apply a tourniquet. PTT has significantly higher rates of severe haemorrhage and emergency surgery than blunt trauma<sup>1-3</sup>.

The key focus in managing PTT is to reduce time to definitive care, with long scene/transport times unequivocally associated with higher mortality<sup>4-7</sup>. This requires an intentionally different approach to our medically unwell and blunt trauma patients.

**In short: There is limited benefit in stopping to 'stabilise' the PTT patient, the decision to rapidly load towards definitive care remains the same irrespective of vital signs or presumed severity of injury.**



### Reducing time to definitive care

Data from AV's Centre for Research and Evaluation and recent evidence shows that less than a quarter of our patients with PTT are achieving scene times under 10 minutes<sup>8</sup>. In comparison, we know that scene times of *under 5 minutes* are both clinically beneficial and achievable<sup>9-11</sup>.

When adjusted for injury severity, evidence suggests that transport by private means or police vehicles may be as good as transport by ambulance, further reinforcing the notion of transport being the primary intervention.<sup>12-14</sup>

### Approaching the scene

These cases are sometimes chaotic and violent by nature, and the scene should be considered unsafe until cleared by police. Stay well back and behind cover – particularly if responding to firearms incidents.

Even if short, time spent at a staging point is an opportunity to develop a quick game plan with your crewmate, a few key things to consider are;

- The location of nearby hospitals and where to load if your patient is *shocked* versus *not shocked*.
- What kit you'll really need to bring to the patient for the short time you're at the roadside.
- The second attendant (AKA "the driver") will be focused on extricating the patient quickly, leaving the primary attendant to perform the initial assessment and management by themselves.
- What, if anything, will stop you from deciding to load and leave the scene?

### On-scene assessment

The *essential* on-scene tasks are to stop any active bleeding and get the patient loaded and moving.

Beyond assessing and managing the primary survey, focus on identifying further injury or wounds – remove *all* clothing and check areas where injuries are often missed, particularly the back, axilla, buttocks, and groin, remembering even small wounds may cause severe damage<sup>15</sup>.

A rapid visual and palpable assessment will tell you if the patient is *shocked* or *not shocked*<sup>8</sup>;





- Radial pulse rate (or its absence).
- Respiratory rate and effort.
- Skin colour and moisture.
- An AVPU assessment

Whilst blood pressure is an important vital sign, on-scene it's unlikely to alter your decision making particularly in the awake and spontaneously breathing patient. Think about whether applying monitoring on-scene will change your clinical decision making, or will it simply impact your overall clinical momentum.

### Management and extrication

The first attendant should manage any haemorrhage with large dressings, haemostatic gauze, and direct pressure, recruiting bystanders or police to help if necessary. Airway and breathing management if required should be similarly simple – a BVM and basic airway support are sufficient. Spinal immobilisation will increase the risk of death due to delays.<sup>6,16–18</sup>

The second attendant has the most important job; getting the stretcher or wheelchair as close to the patient as possible. Whilst it's best to avoid walking these patients – a few assisted steps to a nearby stretcher may be reasonable if necessary.

The patient who *cannot* mobilise is concerning and likely close to arrest. Recruit any bystanders or police to quickly move the patient to the stretcher, and if your only option is an evac-mat then you can wrap and drag. Similarly, consider if any change in vital signs would make you stop mid extrication.

### Deciding where to go

These patients should always be loaded for an Major Trauma Centre (MTC), however if your patient is *shocked* and the difference in travel time between the MTC and a closer level-2 trauma hospital is *more than 20 minutes*, you may be faced with a difficult decision, for example;

***The shocked PTT in Carrum Downs; Frankston Hospital (Level 2) is 10 minutes away, and the Alfred Hospital (MTC) is 35 minutes away...where should you go?***

In these cases, get on to the AV Clinician as they may direct you to a Level-2 centre.

### Now there are wheels under the patient...

Ideally there will be two paramedics to manage the patient during transport, but don't wait around for any extra hands to show up. An accompanying Victoria Police officer may be a valuable asset to provide haemorrhage control during transport.

Once loaded, check for dislodged dressings or clots, particularly on the back and in junctional areas.

Early notification to the receiving hospital is essential. The more notice they have, the better they can resuscitate your patient and deliver your sitrep as soon as you are loaded.

### Rendezvous with other crews

Within 20 minutes of the MTC or Regional Trauma Centre (RTC) a rendezvous may not be beneficial, but for longer trip times it may be beneficial to get some extra hands. Picking up additional crew should take seconds, not minutes- you can get a handover en-route.

Whilst there may be limited added interventions, rendezvous with a MICA Paramedic or ALS Paramedic may assist with essential tasks, decision making, and cognitive offload. This includes for both arrested patients and for credentialed MICA Paramedics, finger thoracostomy and blood products (particularly if the patient is breathing spontaneously, as tension pneumothorax is unlikely).

### Further assessment adjuncts

Blood pressure and heart rate are the key signs to monitor once loaded- consider defibrillator pads if you don't think ECG dots will adhere well to bloodied/sweaty skin. We haven't specified a specific BP for shock, and this is intentional as BP isn't the only indicator of shock – heart rate and consciousness are just as important.<sup>19,20</sup>

Consider what additional assessments would alter your clinical decision making. For example, SpO<sub>2</sub> is very quick to apply and highly specific for pneumothorax<sup>21</sup>, whilst temperature and BGL rarely affect decision making. Even with a fancy cardiology stethoscope, chest auscultation misses over 40% of pneumothoraces<sup>22</sup> and isn't a strong individual indicator of tension pneumothorax.<sup>20</sup>

### HEMS and rural considerations

For major trauma in rural regions, start moving towards a Regional or Major Trauma Centre, liaising with Air Ambulance and the AV Clinician to determine a landing site en route, where appropriate.

Even if cardiac arrest seems likely to occur during transport, non-RTC departments and local urgent care centres typically have limited, if any, capacity to manage any type of PTT case. While rare, it's recommended to share these decision processes with the AV Clinician whilst moving towards definitive care.



## The nice-to-haves

If you've managed to load and give a SITREP, and provided you aren't ventilating or placing direct pressure on a bleed, now's the time to look at what else we can provide our patient;

- **Assessment:** Establish a baseline and utilise your adjuncts – ETCO<sub>2</sub>, SpO<sub>2</sub>, setting NIBP to 2-5 minute cycles, and a formal respiratory assessment, even if you can't hear breath sounds.
- **Oxygen:** Like monitoring, keeping the patient attached to oxygen on-scene is likely to impact your clinical and extrication momentum, but once loaded should be provided in all cases.
- **Warming:** Turn the heater to high and cover the patient with a blanket – even if only partially to allow monitoring of dressings/wounds.
- **Analgesia:** Utilise quickly-administered options like IN Fentanyl or Methoxyflurane early, following up with IV medications, particularly if your patient is agitated from pain.
- **IV access:** Aim for the largest bore cannula that can be *confidently* obtained; 16 and 14 gauge cannulas are more than appropriate, but a flushing 20 always beats a blown 16.
- **Tranexamic Acid (TXA)** should be given once in the ambulance and other interventions established. The recent PATCH trial showed TXA's increased efficacy in PTT compared to blunt trauma when administered within 90 minutes<sup>23,24</sup>. IV is the preference, but IM should be given if you can't get access<sup>20</sup>.
- **IV fluid boluses:** If shocked or peri-arrest then administer to maintain a carotid pulse or cardiac output. Contact the AV Clinician if transport times are extended or you suspect traumatic brain injury<sup>11,25</sup>.

## Should the worst happen...

If your patient arrests, do not stop driving. Update the hospital and do what you can safely perform en-route such as ventilation, fluid resuscitation and needle decompression.<sup>20</sup> Chest compressions in these patients are *not indicated*.

There is a forthcoming update to AV's Traumatic Cardiac Arrest guidelines that will clarify this approach, but to summarise; If your patient becomes pulseless they are far from futile, especially if maintaining signs of cardiac output such as PEA.<sup>26</sup> As we mentioned before, if the transport time is greater than 20 minutes to the MTC/RTC, then contact the AV clinician or receiving MTC on whether to divert to a closer Level-2 facility.

## Conclusion

This article isn't here to prescribe any strict protocol or guideline; this article was inspired by the release of the STAB-5 aide memoire, a simple and effective reminder of our priorities, and we strongly suggest you check it out along with the recent Clinical Conversations podcast on Penetrating Trauma.

To finish, we'll quote some advice David Anderson provided to us when we suggested this article:

*"Crews will be fully supported and indeed praised if they arrive in ED with nothing done other than haemorrhage control, and as short a scene time as is possible."*

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## Clinical Conversations



**James Oswald**

Specialist Clinical Practice Guidelines



**Assoc. Prof. David Anderson**  
Medical Director

## Penetrating trauma

In Australia, penetrating truncal trauma is rare and the care of these patients involves a quite different mindset than we're used to. This is a cohort where our stay and play approach can do harm. James and David discuss the evidence relating to penetrating trauma and practical recommendations for your practice.



Listen on Apple



Listen on Spotify



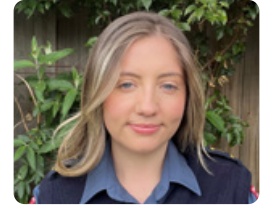


# Patient Management Team: Best Care Story

## Frequent falls



By **Ella Soydas**, Patient Management Lead



### Case

'Sandra' is a 30 year old woman who lives in metropolitan Melbourne, with her parents and young child. She receives a disability support pension and is a NDIS participant. She requires some assistance with ADLs and does not work or study.

Past medical history: mild-moderate intellectual disability, borderline personality disorder, somatic symptom disorder.

### Presentations

Sandra would present with frequent falls or collapses in public places across Melbourne including cafes, train stations, and shopping centres between 0900 and 1700 hours. Sandra would often appear unresponsive, which would elicit a bystander to call 000, and on some rarer occasions perform chest compressions on her.

Most often, cases were dispatched as:

- CARDIAC OR RESP ARREST/DEATH: INEFFECTIVE BREATHING
- UNCONSCIOUS/FAINTING: UNCONSCIOUS – AGONAL/INEFFECTIVE BREATHING
- UNCONSCIOUS/FAINTING: UNCONSCIOUS – ABNORMAL BREATHING

On arrival, Sandra would appear alert and well, however would complain of various non-specific pain, or pain 'everywhere'. On all assessments, there were no obvious deformity or injury, and all vital signs were always NAD.

Sandra's reports of events surrounding her falls were often inconsistent and had been refuted by bystanders or CCTV footage. She was often witnessed to lay herself on the ground, contradictory to her reports of a mechanical fall. Sandra's complaints of various non-specific pain would be managed by paramedics with Methoxyflurane or Fentanyl on nearly every presentation.

Behaviours of concern were documented on 50% of presentations, including significant verbal threats to harm attending crews if she was not administered the medication of her choice or transported to the destination hospital of her choice.

Sandra also began making serious vexatious complaints, alleging that paramedics had assaulted her.

### During a three-month period:

- 80 ambulances attended to Sandra
- 74 transports to nine different hospitals across Melbourne
- Equivalent to 132.1 hours of case time (5.5 days)

### Patient Management Team intervention

- **Engaged the patient.** We spoke to Sandra and obtained her consent for information sharing between AV and the health services involved in her care. We had several discussions with Sandra and her mother about her frequent presentations. Her mother expressed carer fatigue.
- **Unmet need identified.** We liaised with her recently appointed NDIS support coordinator and discovered the previous NDIS company had refused to care for Sandra due to her behaviours, leaving her with a sudden drop in support services.
- **AV-led multidisciplinary meetings.** Attendees included the GP, NDIS support coordinator, MH case manager, several ED consultants from the major hospitals she attended, and the patient's mother as an advocate. After liaising with all the services involved in her care it was determined her falls were considered behavioural, and all investigations were NAD.
- **Advocated for increased NDIS funding.** Recognised an area of unmet need due to the reduction in the patient's support services, which had led to the escalation in reliance on the emergency ambulance service. We advocated for increased NDIS support services, including providing a support letter for increased funding.
- **Frequent Complex Caller escalation pathway.** Escalated the case internally via our Frequent Complex Caller escalation pathway, where we receive input and oversight from major internal stakeholders including Medical Directorate, Regional Operations, Triage Services, Legal, Safeguarding Care and Mental Health. An in-depth case analysis is presented to ensure that we are delivering a safe, ethical and multifaceted approach, to ultimately provide Best Care for one of our most complex patients.
- **Patient Management Plan.** Developed a Patient Management Plan that aligned AV's management with the other health services involved in her care. It included avoiding the use of excessive medication, a single destination hospital, and linking the patient back in with her community supports. It allowed us to provide a





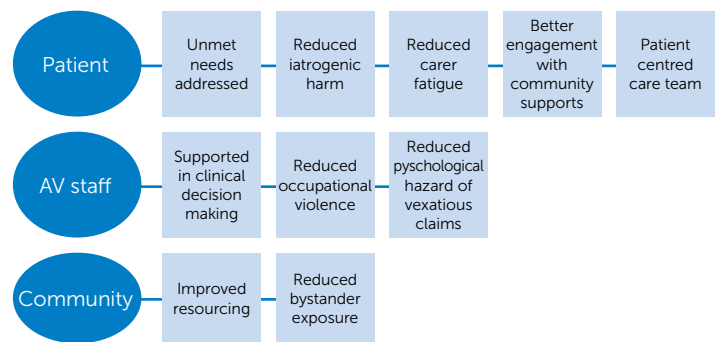
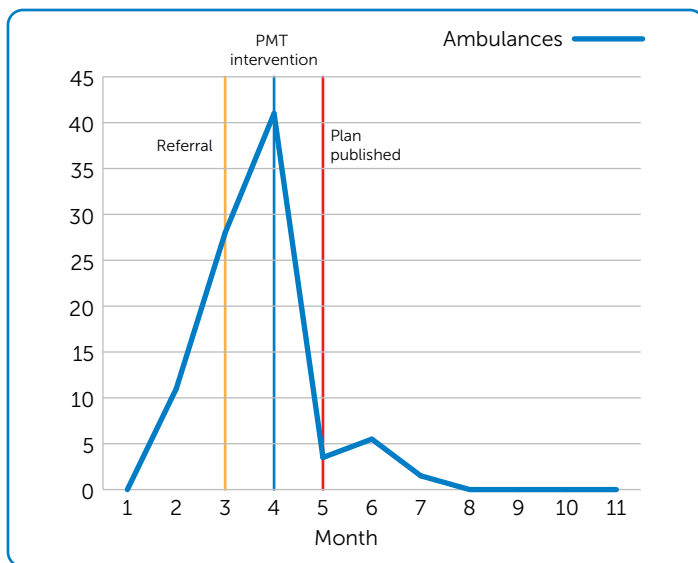
continuum of care and consistent approach to the patient, and supported staff by ensuring a single paramedic was not left alone with the patient due to the history of making vexatious complaints.

- **Local area education.** Provided the local area with education about the patient, her presentations, risks, and included de-escalation and communication strategies to assist crews when attending to her.
- **Legal letter.** Provided the patient a legal letter regarding her false reports of emergencies and her aggressive and abusive behaviours, which was delivered to her in a way that was appropriate for her level of cognition and in consultation with her care team and advocate.

### Result

The patient received an increase in her support services including daily 1:1 carers, regular psychologist, psychiatrist and GP appointments, and had a neuropsychological assessment.

Without these interventions, the predicted trajectory of the patient’s presentations would continue to increase, with an unsustainable volume of calls and underlying needs unmet.

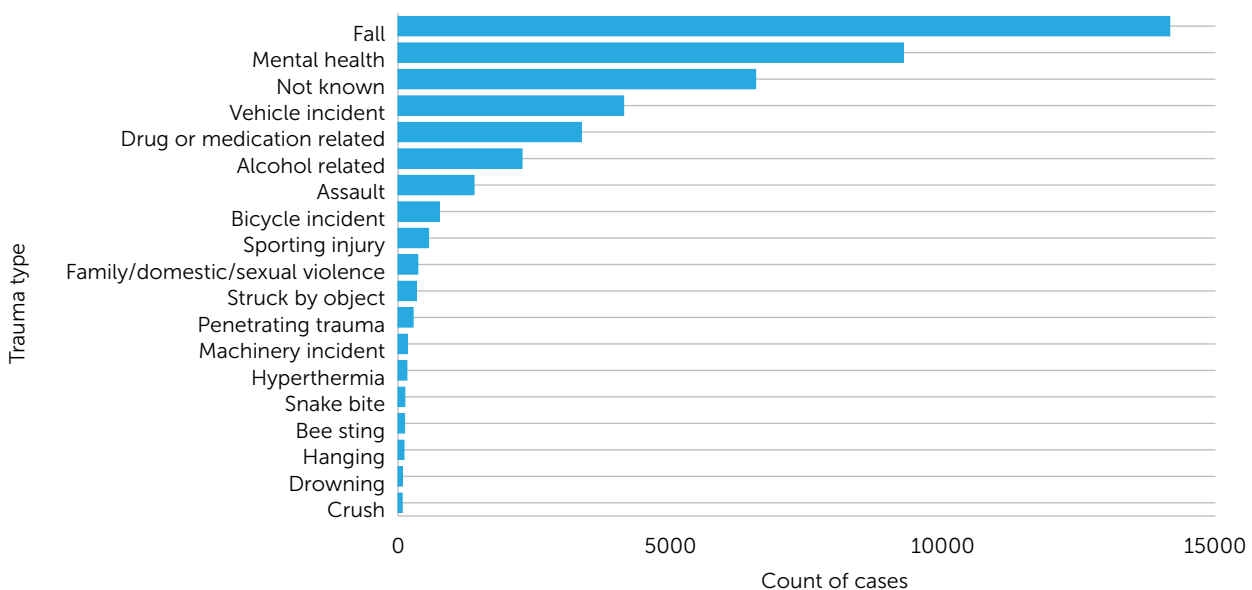


### Statistics

- The top 2% of presenters to AV, account for 14% of total ambulance workload.
- Those that have had more than 10 ambulances in a 3-month period has increased by 64% over the past 5 years.
- At 6 months post-plan, the Patient Management Team achieve an average 74% reduction in presentations in 4 out of 5 patients.

## Did you know?

Below are the trauma case type counts for Q1 2024–2025





# A true crime story

## The lost glove

 By **Andrew Keenan**, Director Complex Care



In a far-off land across the ditch, many years ago, an extraordinary night unfolded. It was 3 a.m. on a cold winter's night when an urgent call came in about a 39-year-old man experiencing chest pain. My partner and I, both paramedics, drove through the silence, the snow crunching beneath our tyres until we reached the address given—a house shrouded in darkness with an ominously open front door.

We parked our vehicle, grabbed our gear, and cautiously approached the house. "Hello? Is anyone home?" we called out as we stepped through the door, our voices echoing with no response but the wind's whisper. Inside, our flashlights revealed a man slumped over a chair, wearing only pants. The source of his chest pain was apparent: a 30-centimetre knife protruded from his chest.

In today's robust safety-conscious world, protocol would demand an immediate retreat from such a scene to await police clearance. But on that night, believing the house empty, we flicked on the lights and hurried into action. The man was warm to the touch but unresponsive—he was already in cardiac arrest. Despite our swift attempts at resuscitation, it soon became clear he was beyond help.

We called the control room and reported the suspicious death, which summoned an overwhelming number of police officers to the house. It was a scene of chaos as they arrived, cascading through the entryway, and soon I was entangled in my first lesson about crime scene management.

Amidst the tangle of medical supplies and the determination to save a life, the mess of glass bottles of sodium bicarbonate, IV bags, and scattered equipment sprawled across the floor. A burly officer, brimming with authority, barked orders for me to cease cleaning. "Leave everything as it is!" he yelled, educating me on the importance of preserving a crime scene for evidence collection.

Feeling a mixture of embarrassment and frustration, I retreated home after my shift, trying to shake off the day's events. However, my respite was short-lived. The next morning, police arrived at my workplace, requiring my return to the scene for clarification and asking me to accompany them to the station for further questioning. I had to provide a

statement and undergo fingerprinting and photography for evidence.

During questioning, the focus turned to whether I had worn gloves during our response. I confirmed I had. Yet, curiously, the police produced a transparent evidence bag holding a dusty note bearing my fingerprints—an impossibility, I'd thought. They also showed me a single paramedic glove found on the front lawn. The realization hit me; I must have dropped a glove while crossing the lawn. That glove could tie someone to the scene with intent and cause—a crucial element in securing a conviction.

The note, the one with my fingerprints, was not all it held; they turned it over to reveal a boot print in blood. This boot print was pivotal. It was matched to another individual, one with known gang affiliations who had been seen in the vicinity—a break in the case.

What did I learn from this night of cold realisation and haunting mistakes? Firstly, never enter an unsafe scene without doing a dynamic risk assessment. It's perfectly acceptable to leave if the situation feels threatening. Secondly, after a suspicious death, preserve the scene precisely as found—leave all medical articles untouched, retain indwelling devices, and avoid cleaning. Do not cover the deceased, and try to retrace your steps out to minimise scene contamination.

These lessons, though learned the hard way, became fundamental in practicing safety and ensuring justice—a night across the ditch that left its mark forever engraved in my life and practice. See work instruction [WIN/OPS/070 Approach to a Scene](#).



# National Ambulance Surveillance System

## Suicidal and Self-Harm (SSH) Behaviours 2022 (VIC)

Courtesy of the **National Addiction and Mental Health Surveillance Unit (NAMHSU)**, Monash University

### National Ambulance Surveillance System (NASS)

The NASS is a novel public health monitoring system tracking ambulance data on alcohol and drug harms, mental health, suicide, and self-harm in participating Australian states and territories. The NASS is a collaboration between Turning Point, Eastern Health, Monash University, and ambulance services nationally. Each time paramedics respond to an event, they create an electronic patient care record (ePCR)

detailing patient data, assessment, and treatment. These records are reviewed by the National Addiction and Mental Health Surveillance Unit (NAMHSU), a team of specially trained researchers who analyse the data. The subsequent data helps to inform and evaluate policy and clinical practice, identification of intervention points, and workforce development at local, state and national levels.

### Types of attendances



**22,317**

SSH-related attendances  
(**20%** decrease from 2021)



**8,181**

Suicide attempt attendances  
(**15%** decrease from 2021)



**11,348**

Suicide ideation related attendances  
(**24%** decrease from 2021)



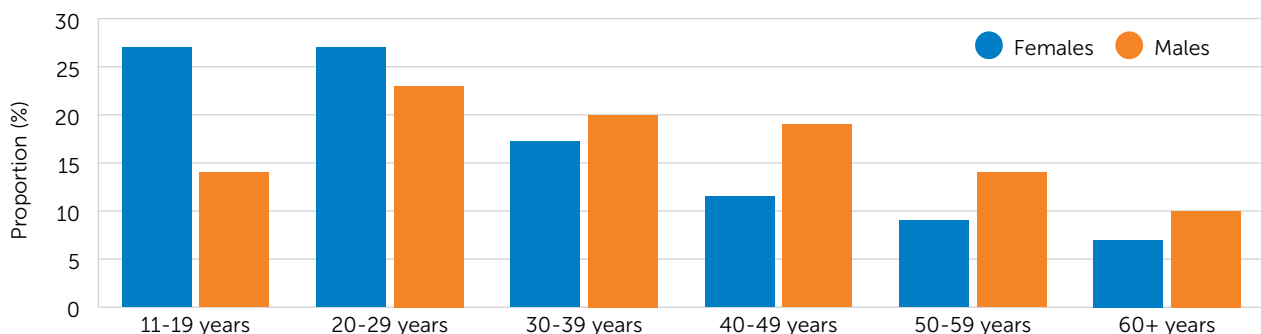
**4,266**

Self-harm attendances  
(**16%** decrease from 2021)

\*Self-harm is not mutually exclusive and may be present within suicide attempt or ideation-related ambulance attendances

\*\* SSH is inclusive of suicide attempts, suicidal ideation and non-suicidal self-harm

### SSH attendances by age and gender



\*Under 11 years excluded due to comprising <1% of attendances

### Demographics and service use



**59%**

Of attendances were for females, **40%** were for males



**58%**

Of attendances with police co-attendance



**119 minutes**

Mean time spent with patient for SSH-related attendances



**93%**

Transported to hospital

44% of 2022 SSH attendances had AOD involvement



# Alternate Care Pathways: Managing falls

## The three best alternate services for the patient who is uninjured, older or frail

 By **Sam Peart**, Alternate Services Lead

Falls have always been a staple of the ambulance and health services workload. As the Victorian older population increases, so does the incidence of falls among older and frail people.

Ambulance Victoria Triage Services refer almost half of the fall cases they assess to alternate services or Patient Transport. The remaining patients assessed by paramedics in person can be managed with a more targeted treatment plan using a combination of the Elderly/Frail Non-Injury Fall, Traumatic Head Injury, Victorian Virtual Emergency Department (VVED), and other relevant trauma CPGs.

Managing an older or frail patient post fall requires careful consideration and assessment of injury, cause, the likelihood of a repeated incident, and realistic ability to prevent future falls. This discussion focuses primarily on the patients who have 'low energy falls' suspected to be environmental or mechanical in nature, without signs or symptoms of head injury or other significant injury, and are able to have cervical spinal clearance apart from age. The reason for such specific criteria is because of the significantly increased risk of severe unrecognised injury from a seemingly small mechanism of injury. Factors such as poor recollection of events, anticoagulant medication, or time on the ground greater than one hour, can also increase complications and possibly warrant assessment at hospital.

Besides encouraging follow up and falls assessment with the patient's GP, there are three key services to consider before deciding to transport or not, the person who is older, frail, and uninjured post fall.



### Nurse in the home via Field Referral

Patients living in a private residence can benefit from an in-person nurse visit usually within 24 hours of ambulance attendance. They can provide follow-up advice, falls risk assessment, medication assistance, and care planning, to be passed onto the patient's doctor. This service requires the patient to have adequate support at home to ensure their safety prior to the visit and can be used in conjunction with a paramedic assisted GP booking or VVED consultation if required.

### Residential In-Reach (RIR)

Associated with local health services to support residential aged care facility (RACF) residents and staff with falls management and other care needs. RIR provides assistance both over the phone and in person, aiming to manage patients on-site and avoid unnecessary ED transport. Patients from RACFs triaged as a code 2, 3 or for Patient Transport at point of 000 call are transferred to Triage Services and managed under the Residential Aged Care Enhanced Response (RACER) pathway. This is in an effort to connect patients to the most appropriate care without requiring ambulance attendance. If a patient is identified as uninjured and their fall isn't linked to a serious medical incident, RIR or VVED can manage their care.

### Victorian Virtual Emergency Department (VVED)

Supporting patients in private residences or RACF, VVED allows paramedics to link patients in with specialist healthcare services such as geriatricians 24/7. VVED can connect patients with local catchment community care providers and provide reports for GP and RIR if required.

Transport to the hospital may be unavoidable when serious underlying injury cannot be ruled out. However, for each patient we appropriately refer to an alternate service provider, we can enhance their overall healthcare experience and reduce the risk of complications, like hospital-acquired delirium and infections, amongst a vulnerable group.



# Paramedic Blood Component Access Project



**A/Prof Ben Meadley ASM**, Director, Paramedicine, Ambulance Victoria, **Rae French**, Blood Matters Scientist, Victorian Department of Health and Australian Red Cross Lifeblood, **Andrew Allan ESM**, Intensive Care Flight Paramedic and Chair, Blood Management Committee, Ambulance Victoria.

## Background

Ambulance Victoria (AV) helicopters carry four units of red blood cells (RBC), however weather and resourcing limitations may affect the ability to deliver RBC. Widespread carriage by intensive care paramedics on ground-based resources has several limitations. Until recently, if a helicopter was unavailable to respond to a critically unwell patient in rural areas, paramedics may request blood components from a local health service. In the metropolitan area, inconsistent availability of aeromedical teams via road platforms provided variable availability of blood components for patients who are trapped in the setting of major trauma (or similar). These informal processes resulted in unclear clinical guidance, waste, lack of governance, and health and aeromedical services being caught off-guard regarding inventory management. To rectify this, the AV Operational Improvement team collaborated with key stakeholders to standardise and improve the processes to enable blood component access for critically unwell patients in the field.

## Project aims

Ambulance Victoria education and clinical processes for blood component access and use in the ground-based response environment were not fit for purpose. The primary aim of the project was to ensure that blood management processes at AV are effective in assuring patient safety and excellence in clinical practice. Secondary aims included: ensuring compliance with the National Safety and Quality Health Standards (NSQHS) Blood Management Standard; minimising product waste; enhancing traceability; determining the fate of blood components when administered outside of a hospital; aligning AV procedures to the wider health system in Victoria; enhancing paramedic education; and enhancing critical care service delivery to the Victorian community.

## Methods

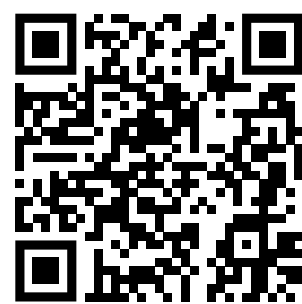
The project team worked with transfusion scientists, hospitals, chief medical officers, paramedics, educators, and audit and governance specialists to develop foundational learning packages and systematic workflows to ensure patient-safe practice, and protection of this precious and life-saving resource. All intensive care paramedics were required to complete the BloodSafe Transfusion Practice Module, already available to in-hospital clinicians and aeromedical teams. Additionally, the project team created a

bespoke blood management resource tailored to the out-of-hospital environment, aligned with AV clinical practice guidelines and logistical arrangements. New operational workflows were designed to be user-friendly and enhanced to be compliant with NSQHS Blood Management Standard. For incidents in rural areas, ad-hoc requests were replaced by formal consultation with aeromedical and retrieval service coordination staff. A flight coordinator or physician assesses each case and determines the most suitable health service to request supply of blood components, cross-referencing the statewide blood component inventory database and organising delivery to a scene when a helicopter is not available. Additionally, a new process was developed to enable aeromedical teams to respond consistently via road in the metropolitan area.

## Outcomes and operational impact

After successful implementation, the project team continues to apply contemporary improvement science principles to ensure that the processes evolve as required. The team has worked to ensure that this precious resource is reserved and available for the most critical patients, health service stock is preserved, and product waste is minimised or avoided.

## For further information



Search for WIN OPS 405 Blood Component Access from a Health Service and WIN OPS 404 Blood Component Access from Air Ambulance Airbase: Essendon Fields on OneAV.

You can find the Blood Administration checklist on the CPG App.



# Safe Treatment of Atrial fibrillation in the community (STAY): A trial update

## The burden of atrial fibrillation

 By **Daniel Okyere**, Lead Clinical Trials

Atrial fibrillation (AF) is the most common sustained cardiac arrhythmic disorder and presents a significant challenge for healthcare resources despite advancements in prevention and management.<sup>1,2</sup> In Australia, the prevalence of AF is expected to double between 2014 and 2034, in line with global trends.<sup>1,3</sup> The disease burden of AF is primarily attributed to its association with an increased risk of stroke, heart failure, and cardiovascular-related death.<sup>4-6</sup>

Data from Ambulance Victoria (AV) indicates that from January 2015 to June 2019 nearly 24,000 adults with AF required ambulance services, with approximately 18% needing repeat attendances.<sup>6</sup> AF accounts for 1 in 100 EMS attendances, with almost every patient (99.4%) transported by paramedics.<sup>6</sup> The current standard of care involves emergency department (ED) transport for rhythm or rate control, heart failure management, and thromboprophylaxis.<sup>5</sup> However, evidence suggests that 53% of these patients are low-risk and are safely discharged from the ED or short-stay unit (ED/SSU) within a median of 5 hours.<sup>6</sup>

A significant portion of the AF burden on paramedics and ED could be reduced by developing and implementing a novel pathway. A pathway that enables paramedics to assess, treat and refer low-risk AF patients for medical assessment via a rapid access cardiology clinic could significantly improve patient outcomes and alleviate the strain on healthcare resources.<sup>7</sup>

**Avoiding hospital transport when appropriate could offer substantial patient and system-wide advantages, including potential reductions in hospital ramping while ensuring patients receive improved health outcomes and experiences.**

### The Safe Treatment of Atrial fibrillation in the community (STAY)

STAY was a feasibility trial conducted by Ambulance Victoria and Austin Health within the Ambulance Service Area 7 (ASA 7) catchment area. It began in November 2021 and saw paramedics screen a cohort of low-risk patients aged 18 years and older with an acute presentation of AF for inclusion in the trial. Low-risk status was determined based on the absence of specific high-risk clinical characteristics, including severe or distressing symptoms, haemodynamic compromise (shock or BP < 100 mmHg systolic), elevated heart rate over 160/min, heart failure, hypoxia, ischaemic



chest pain, and recent severe or clinically relevant non-major bleeding. Patients without these high-risk features were considered eligible for the trial. Conversely, patients presenting with one or more high-risk features; patients with contraindications to medications such as rivaroxaban or metoprolol; and patients unable to be left at home in the care of a family member or other carer, were excluded from the study and transported to a hospital ED.

### Study aim

STAY aimed to evaluate the safety and feasibility of an integrated community-based model of care for low-risk patients with AF and to gather data that will allow this new model-of-care to be implemented system-wide. Overall, the study aimed to reduce the number of patients with AF who arrive at a public hospital ED via ambulance in Victoria.

### Study procedures

When a patient is suspected to have an acute AF presentation, paramedics conduct risk screening to confirm patient eligibility. If the patient meets all inclusion criteria and no exclusion criteria, the patient is eligible for STAY.

The Austin on-call cardiologist was made available 24 hours per day, 7 days a week for shared care to be delivered to patients with AF. The on-call cardiologist was contacted via telephone for consultation. The patient's ECG was transmitted through the Zoll system and upon confirmation of AF, management followed the agreed protocol based on the cardiologist's directive. This included paramedic administration of an oral beta-blocker (metoprolol) and/or a single dose of oral anticoagulant (rivaroxaban) were appropriate.

Patient details were collected and forwarded to AV's research team for urgent rapid cardiology follow-up. The Austin AF 'Express team' then contacted the patient (either in-person or via telehealth) daily to organise a rapid access cardiology appointment, usually within 48 hours.

### Study endpoints

The primary endpoint was the delay in clinic attendance for community-based care versus standard care (hospital transport to ED), while feasibility was defined by the proportion of low-risk patients managed safely in the community and attending the AF clinic. Safety was assessed using a clinical risk tool (proportion of patients not at low

risk), and the proportion of adverse events after medication administration. Clinical risk stratification tools [the CHA2DS2-VASc score to assess the risk of thromboembolism, and the HAS-BLED score to assess the risk of bleeding] were administered and documented as part of clinic attendance. Acceptability was defined as a Net Promotor Score of > 60% (administered at the clinic attendance).

### Preliminary results and next steps

STAY formally concluded recruitment in September 2024. Preliminary data suggests that the trial was both feasible and safe, with the majority of patients being seen by the outpatient clinic within 24 hours of paramedic referral. There were no deaths at 30-day follow-up, and only a small number of patients presented to the ED following referral. The results of the STAY trial will be formally prepared for publication and disseminated to the AV workforce when available.

The findings highlight the feasibility and safety of redirecting low-risk AF patients to the outpatient rapid-access cardiology clinic at the Austin Hospital. With approximately 4,500 low-risk AF patients attending across the state each year, most of these patients could benefit from an integrated service. Expanding this community-based care model could significantly improve patient experience and reduce the burden of AF presentations in the ED. The STAY trial has established a foundation for a paradigm shift in AF management, and we are eager to explore opportunities to

expand this service statewide, ensuring that more patients receive timely, specialised care.

The STAY trial investigator group would like to express gratitude to the paramedics in ASA 7 for helping to make the trial a success. Their dedication and expertise were instrumental in advancing this innovative care model, which we hope will translate into an established clinical pathway for patients with AF.

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## Grand Rounds

### Spring: Improving diagnosis for patient safety

In celebration of World Patient Safety Day and WHO's 2024 theme, our Spring Grand Round highlighted the vital, yet often overlooked, role of paramedics in the diagnostic process.

- **Evolution of diagnostic practices:** James Oswald provided a compelling overview of how diagnostic methods have advanced in medicine and paramedic practice.
- **Effective diagnosis:** Assoc. Prof / Dr Carmel Crock OAM emphasised that diagnosis is a complex process that requires constant refinement, relying heavily on effective information gathering and teamwork.
- **Acute behavioural disturbance:** Dr Elyssia Bourke shared expert insights into the diagnostic challenges associated with patients experiencing acute behavioural disturbance.
- **Best Care story:** Sam and Steve illustrated how a well-coordinated system can lead to timely interventions and optimal patient outcomes.



### Watch on demand

You can watch the Grand Round webinars anytime and earn 1.5 hours of CPD credit. Just search for 'Grand Round' in the Learning Hub. Recent topics include:

- Managing Respiratory Problems
- The Deteriorating Patient
- Improving Patient Diagnosis
- Victorian Trauma Grand Round – Trapped v non-trapped trauma patient
- After the Silver Tsunami

Stay informed and enhance your knowledge with these evidence-based discussions.



# Differentials: Trauma



By **Penny Grattan**, Acting Lead Commencing Practice

Back again! These seasons roll around swiftly, and here we are once more with some questions designed to challenge your problem-solving and clinical reasoning skills, and to expand your critical thinking.

Regardless of your level of experience, these activities can challenge your thinking and broaden your knowledge. They are intentionally unstructured, this time focusing on trauma, subtle trauma that can have significant consequences.

In this round, you will ask yourself: **Where's the risk?**  
**What's the harm?**

## Let's work through the first one together.

*You are working at your current branch on your current shift. You are dispatched to a 35-year-old man involved in a nose-to-tail motor vehicle accident. It's a 50 km/hr zone and no one was speeding. The man states he slammed the brakes and avoided major car damage. He's distracted, irritated, and rubbing his neck continually. He is worried about his car, it's a collector vehicle, a Ford Fairmont XW 1970s model with club plates. No airbags were deployed. He didn't hit his head, stating 'it's just a little whiplash.' His vital signs are normal, and the pain isn't 'that' bad.*

What are your initial thoughts?

What else would you like to know?

Does he meet any category of trauma triage?

Where's the risk?

What's the harm?

## Again?

*You are working at your current branch on your current shift. You are dispatched to an 84-year-old man who has fallen on the ground when attempting to get out of bed. You find he is alert, and has been on the ground for approximately one hour. He states he fell awkwardly but not far, and that his left leg is painful. He can't move his left leg, but it is otherwise neurovascularly intact. You can see that the thigh is swollen, there is no shortening, and it is not rotated. His medications include Asterix and Atenolol and his vital signs are within normal range. You tell him his blood pressure is good, and he jokes 'Well, that's one positive the doc always tells me it's too high and my heart rate is low'.*

What are your initial thoughts?

What else would you like to know?

Does he meet any category of trauma triage?

Where's the risk?

What's the harm?

## Another one.

*You are working at your current branch on your current shift. You are dispatched to a 62-year-old woman who tripped when assisting her husband to load the boat on the caravan for their next holiday. She has a history of breast cancer and had a mastectomy with lymph nodes removed on her right side. She has been in remission for 17 months after completing chemotherapy and does not take any medications other than daily vitamins. She didn't hit her head, and recalls the event, her right wrist feels stiff but not deformed, she fell on her outstretched hand landing across a low gutter. There is redness around her ribs, mid axillary line, but the ribs aren't sore, and breathing is unaffected, with normal RSA including on auscultation and she states, 'Oh I don't want to bother anybody, I know you are busy'.*

What are your initial thoughts?

What else would you like to know?

Does she meet any category of trauma triage?

Where's the risk?

What's the harm?

Seems all pretty straightforward right? Or is there more to each of these situations, lingering in the edges of the story, hidden in plain sight?

Thank you again for following along. Now, please see if you can create your own case studies and questions to challenge yourself or maybe your colleagues. And don't forget to ask yourself on your next case, is there more to this story? What else could it be?

**Learn** something new or refresh your knowledge.

**Reflect** on how you are going to incorporate that learning into your practice.

**Log** your reflections and remember to keep your records for five years.

