AmbulanceVictoria®

Clinical Insights

ISSUE 6 WINTER 2025

HIGHLIGHTS OF THIS ISSUE

Safe in Place – Rethinking non-transport in patient care

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Welcome

A message from David Anderson

Medical Director

By **Assoc. Prof. David Anderson**

A few years ago, if you had asked me about the riskiest thing paramedics do, my response wouldn't have been RSI or complicated winch rescues. I would have immediately replied "leaving people at home."

I was probably right – for a number of reasons. Paramedics weren't registered and didn't have the education they have now. Being transported to hospital reliably resulted in assessment by an appropriate clinician in a timely manner, options for follow up or continuity of care in the community were limited or non-existent.

That was then, and this is now. In 2025, in a struggling post-pandemic health system, with university educated and well supported paramedics and nurses, and with technological advances that seemed fanciful even only a couple of years ago, I don't lose any sleep at all over paramedic *attend, non-transport*, or diversion from emergency response by secondary triage.

This issue of Clinical Insights puts the spotlight on *attend, non-transport*, and hopefully provides some reassurance for you that, if you have done a careful assessment and consulted appropriately when required, we absolutely support you in not transporting a patient if you feel that it is the best option for them. Transporting "just in case" may well have been the safest option in the past, but it likely isn't the safest option now for most patients (of course there will still be some groups who are more vulnerable, such as frail older adults or the very young who you should have a lower threshold to transport, but this should no longer be the default position).

The case studies in this issue include a person with suicidal ideation, a vulnerable older person suffering a health crisis, diabetes, muscular pain, palpitations and frequent calls in a patient with complex mental and physical health concerns. A key theme running through all of the articles and an issue that James and I touch on in a recent episode of Clinical Conversations is the importance of consultation in modern professional paramedicine. One of the reasons that you are now able to safely leave people at home who you would once have transported for further care is that technology now allows you to easily undertake a video consultation with the clinician who would likely have been assessing the patient when you got to hospital. Whether that is an emergency physician from VVED, a mental health nurse from TelePROMPT or even an endocrinologist via the VVED diabetes service. It's difficult to overstate how much technologically assisted consultation has changed and will continue to change the practise of paramedicine in the future. It's an exciting opportunity which I think will allow everyone in the out-of-hospital environment to practise to the top of their scope of practice.

You can listen to the Clinical Conversations podcast below

Apple Podcasts
https://podcasts.apple.com/au/podcast/clinical-conversations/id1557773702

Spotify
https://open.spotify.com/show/03gWpFDyiuJFh88KDrp4qy?si=55af16e1446644dd

In addition to case studies, and moving away from the *attend, non-transport* theme, this issue contains a couple of great summaries of some of the recent outputs from our world-leading research team – including a fantastic paper on the effect of GoodSAM responders that was recently published in the Medical Journal of Australia; a report from Australasian Emergency Medicine journal on the recently concluded Paramedic Administered Antibiotics in Suspected Sepsis (PASS) pilot trial showing that paramedics can effectively draw blood cultures and administer antibiotics to patients with suspected sepsis significantly earlier than the might have got them in hospital; and a paper from the Air Medical Journal comparing various types of pre-oxygenation approaches for prehospital RSI.

The GoodSAM paper was led by paramedic researcher Belinda Delardes and is worth highlighting. It showed that if a GoodSAM responder arrives before the ambulance crew, the patient is eight times more likely to receive bystander CPR, sixteen times (!) more likely to receive bystander defibrillation, and thirty-seven per cent more likely to survive to hospital discharge. Truly incredible results and a testament to everyone in our community who has signed up as a GoodSAM responder. I actually got a GoodSAM alert the other day.

As many of you know I split my time between Regional Victoria and inner-city Melbourne and I was at my apartment, in an important finance Teams meeting when I got a GoodSAM alert to a cardiac arrest only 200 meters away! I made my excuses to the bewildered finance consultant, grabbed a pair of gloves and headed to the scene, planning to grab an AED that I had spotted on the way using the GoodSAM app (I thought that

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taking the lift down to the basement carpark to get mine out of my car would take too long). In the end I didn't need the AED as I arrived just after FRV and was able to take over the airway from a very thankful looking firefighter until the first Ambulance Victoria (AV) crew arrived. I felt privileged to have been part of the chain of survival for this patient, especially knowing what a difference I could have made based on Belinda's article. I strongly encourage any of you who haven't registered for GoodSAM yet to do so and encourage your friends and family to do the same.

This winter edition of Clinical Insights goes from one end of the acuity spectrum to the other. We discuss *attend, non-transport* and alternative referral pathways for patients with low and medium acuity presentations and then look at some AV led research on critically ill patients in the prehospital setting. A clear theme carries through all of the articles - the outcomes we can achieve, both clinically and from a research perspective, are strongest when we recognise and support each other as professionals. By working together with the patient at the centre of everything that we do, we enable meaningful and impactful care across AV. I hope you enjoy reading this issue as much as I have, and I look forward to hearing your suggestions for what you'd like to see in future issues of Clinical Insights. ■

Quality and Clinical Innovation update

Safe in Place: A new horizon?

By **Tegwyn McManamny** Executive Director Quality and Clinical Innovation

Victoria has seen a significant rise in ambulance demand in recent years, compounded by increased pressure on emergency departments (EDs). This is largely driven by an ageing population, a rise in comorbidities, barriers to primary care access, and resulting increase in patients presenting with more severe health conditions.

With the number of patients presenting at hospital outweighing the capacity of the EDs to provide care and transfer patients requiring admission to the ward, hospital ramping increases. This bottleneck has flow-on effects to the community, preventing timely ambulance turnaround (generally accepted as transfer of care occurring in 40 minutes or less).

The system gridlock has far-reaching consequences. When ambulances are delayed at hospital, they're unable to respond promptly to new cases in the community. That delay matters, and response delays can have a significant impact on patients – we know timely arrival is linked to improved outcomes for numerous patient presentations, and every minute lost can translate to preventable harm.

This is a key reason why it is more important than ever to determine, in collaboration with each individual patient, what the best care pathway is for them. While some patients will require hospital transport as the first and only safe option, others may benefit from a care pathway that supports them to avoid ED presentation altogether and instead receive safe, high-quality care through an alternative service provider (VVED, Teleprompt, Palliative Care Advice Service) or through a trusted local provider (patient's GP, a physiotherapist, a pharmacist, local nurse practitioner etc.).

A comprehensive assessment remains key. Every patient will require a thorough assessment including history gathering, before determination regarding non-transport is made. Their individual circumstances should help to inform your shared decision (i.e. if they haven't got transport, live alone, are very old or very young, or if they are from a culturally or linguistically diverse group, then your care pathway should take this into account as part of patient safety-netting). Support is always available: there are people to share your decision with if you're keen to sense-check anything (the AV Clinician, the Critical Care Liaison paramedic, and Adult Retrieval Victoria are some key friends here) and great resources to help support decision-making, such as the Non-transport Checklist, CPG A0108 Clinical Flags and CPG A0114 Virtual ED.

As ever, thoroughly documenting the patient assessment and the decision made is critical. More than 30 per cent of AV's reported patient safety incidents would be closed before any review if VACIS documentation was improved. This is a powerful reminder of the role good documentation plays in clinical safety and governance.

We're entering a new era at AV – one in which connectivity, technology, and an evidence-based approach are front and centre, our highly-trained and professional paramedics are supported to leave the right patients at home, and hospital ramping is recognised as a symptom of a health system in crisis, not an ambulance problem. It is going to take time for us to get this consistently right, but with demand increasing and more winter months ahead, we must not just think smart, but brave as well. ■

Supporting *attend, non-transport*: prioritising the right care, every time

Safe in Place

Regional Operations update

By **Danielle North** Executive Director Regional Operations

At AV, our commitment to delivering Best Care through safe, effective, person-centred and connected care guides every decision we make in the field. As system-wide demand continues to rise and pressure on emergency departments intensifies, the ability to safely redirect patients to the most appropriate care pathway has never been more vital.

We recognise that for some of you, choosing *attend, non-transport* remains a complex decision. There are ongoing reports that some clinicians 'err on the side of transport', a risk-mitigation strategy driven by concerns about patient outcomes or perceived accountability. As leaders, we want to be clear, when clinically appropriate, AV fully supports our paramedics in selecting alternative care pathways. We support your clinical judgement and decision-making, and we are actively working to ensure this is reflected across our systems, guidelines and practices.

In light of increased awareness around the benefit of safe, patient focused non-conveyance, this is a timely opportunity to reinforce our shared understanding: that clinical appropriateness, not transport by default, should always guide our care and decision making.

While the term 'non-conveyance' is now used in policy and reporting, many clinicians know this as *'attend, non-transport'* or 'treat and refer'. The language may evolve, but the goal remains the same, connecting patients to the most appropriate care for their needs. Recent policy updates reflect this commitment. The revised WIN OPS 015 Operational Staff Key Response Requirements, now includes explicit reference to non-conveyance and the expectation to safely redirect patients to appropriate alternatives such as general practitioners, urgent care clinics, residential in-reach services, community palliative care, and mental health supports. Updates to WIN OPS 043 – AV/ED Interface and WIN OPS 400 – Key Staff Responsibilities further embed non-conveyance guidance, aligning with AV's commitment within the new Performance Standards.

> "Clinical practice guidelines now increasingly give clearer guidance and support for non-transport decisions, helping clinicians confidently match patients with the most appropriate care pathways."

Clinical practice guidelines now increasingly give clearer guidance and support for non-transport decisions, helping clinicians confidently match patients with the most appropriate care pathways.

Section 8.3 of the Performance Standards reinforces that the most appropriate care pathway should always be prioritised. Clinical staff are encouraged to consult with services such as the Victorian Virtual Emergency Department, TelePROMPT, and the Palliative Care Advice Service to support sound, patient centred decisions.

We also acknowledge that these cases may require longer scene times, particularly when complex consultations or patient refusals are involved. In these instances, maintaining Best Care principles remains paramount, with regular updates to dispatch and timely commencement of patient documentation.

To our paramedics: we see the care you provide, the decisions you make, and the challenges you navigate daily. Non-conveyance is not a departure from good care; it's a vital and endorsed part of contemporary professional practice. You have our full support in using the tools and pathways available to deliver safe, appropriate, and effective care.

Let's continue to place patients at the heart of our decisions and lead with confidence in delivering the right care, in the right place, at the right time. ■

Safe in Place

Managing suicidal ideation in a patient refusing care

Best care case study

By **Amanda Thornton** Darebin 2 STM and Safe in Place Project Lead (TECC2)
Brad Gin Metro 1 Improvement Lead

Case

Peter*, is a 69-year-old man, who lives at home with his wife. He has a history of multiple chronic conditions, including lung cancer, COPD requiring home oxygen, insulin-dependent type II diabetes, and has experienced an increase in falls recently with an admission to hospital five days prior.

This was Peter's second presentation to AV from his home within 24 hours.

Patient

During his recent three-day hospital admission, Peter reported a significantly negative experience. He had hoped to be transferred to rehabilitation due to his perceived physical decline. Unfortunately, his expectations for rehabilitation were not met, and following a difficult interaction with a doctor, he felt unsupported and chose to self-discharge against medical advice.

Since returning home, Peter had refused to take his prescribed medications including oxygen therapy. Concerned for his mental health, his wife contacted Area Mental Health Service (AMHS) Triage, using the number provided after AV's attendance the previous day and in consultation with AV's embedded mental health service 'TelePROMPT'.

The Crisis Assessment and Treatment Team (CATT) assessed Peter in person that day, determining that he did not meet the criteria for a compulsory assessment order. However, with dangerously low oxygen saturation and high blood sugar levels, they called Triple Zero Victoria before departing Peter's home.

Assessment

Upon AV arrival, Peter expressed a clear intent to end his life by not taking his medication or oxygen therapy as an act of retaliation against the doctor whom he perceived had treated him poorly during his hospital admission.

AV assessment revealed a blood glucose reading of 'HIGH' and oxygen saturation at 76 per cent on room air, with an increased respiratory rate. Although he experienced shortness of breath both at rest and worsening with exertion, there were no signs of acute medical instability.

Peter's affect fluctuated, ranging from flat to neutral and appropriate, to irritable and mildly agitated, particularly when discussing his recent stressors. Despite these emotional shifts, his responses remained appropriate, demonstrating normal thought flow, speech, and concentration. His thought content centred on his intent to die, with the plan to not take his medication—stating that his goal was to "get the doctor in trouble" and to "make her know how much she has hurt me."

There was no evidence to suggest that Peter lacked decision-making capacity, and he demonstrated a clear understanding of the consequences of refusing treatment.

Consultation and management

Initial management

Through initial rapport building efforts, Peter agreed to resume his home oxygen therapy, which quickly improved his oxygen saturation level and his shortness of breath.

Building rapport and trust

To ensure patient engagement, ongoing efforts were made to validate Peter's feelings and experiences while establishing trust. The hospital complaint process was explained, and support was offered to assist him in submitting a formal complaint which was completed on scene. The facilitated complaint submission to the hospital helped gain his trust and build rapport.

Initial consultation

Based on Care and Control criteria under Section 232 of the *Mental Health and Wellbeing Act (2022)*, it was unlikely that Peter met the threshold for intervention, as his risk was not considered serious and imminent. Using CPG A0107 Mental

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Health Conditions as a risk matrix, the crew determined that while he did not exhibit high-risk symptoms, he presented with medium-risk features—specifically suicidal ideation, which warranted specialist mental health assessment. Given that CATT had assessed him earlier in the day, the crew prioritised consultation with this service to determine if there was a change in Peter's presentation.

When contacted, CATT reported that Peter had not expressed suicidal ideation during their initial assessment. Despite this new information, they did not believe reassessment was necessary as they were of the opinion Peter's suicidal ideation was transient and associated with his situational distress. The issue was escalated to their team leader and subsequently the psychiatrist on call, who recommended that CATT return to the scene and conduct a reassessment based on the newly identified suicidal ideation.

AV Clinician update

It was relayed to the AV Clinician that Peter had decision-making capacity in accordance with CPG A0111 – Consent and Capacity, and that the crew had fully informed him of the risks associated with his decision. As such, Peter retained the right to refuse treatment, unless subject to a compulsory inpatient order or 'Care and Control' power under the *Mental Health and Wellbeing Act 2022.*

Secondary management and follow-up consultation

Following the development of rapport and time spent actively listening to Peter's concerns—particularly validating his negative hospital experience—he demonstrated a positive shift in mindset. He agreed to recommence his prescribed medications and consented to a consultation with the Victorian Virtual Emergency Department (VVED) for immediate diabetes management support.

Peter also expressed willingness to pursue potential admission to rehabilitation via his GP and consented to involving his daughter as an advocate for future GP appointments and hospital admissions.

At this point, CATT arrived on scene and conducted a reassessment, determining that the patient would no longer meet the criteria for a compulsory assessment order given his agreement to resume his medications as prescribed. They acknowledged the significant progress made in developing a comprehensive and safe care plan, which the patient was actively engaged in and committed to following.

Safety netting

Referral to VVED Virtual Ward

To further support the patient's medical needs, Peter was admitted to the VVED 'virtual ward' for the next 48 hours, ensuring diabetes management and monitoring of his oxygen saturation levels. The VVED committed to providing a discharge summary to his GP.

"To further support the patient's medical needs, Peter was admitted to the VVED 'virtual ward' for the next 48 hours, ensuring diabetes management and monitoring of his oxygen saturation levels."

Family engagement and support

With Peter's consent, the crew contacted his daughter to provide an update on his health status and his engagement with AV and CATT. She was encouraged to support his upcoming GP appointment and assist in seeking ongoing mental health and rehabilitation services. She expressed appreciation for being informed and readily agreed to be involved in his ongoing care.

Summary

This case highlights the importance of collaborative care, trust-building, and tailored care to ensure safe and effective outcomes for patients with complex medical and mental health needs. Through proactive engagement, identification and validation of concerns, and coordinated medical and mental health support, the patient was empowered to resume essential care, access ongoing treatment, and involve family in future care decisions.

**Peter is not the patient's real name*

Safe in Place

Driving improvement through the Timely Emergency Care Program (TEC2)

Spotlight on Safe in Place

By **Amanda Thornton** and **Nat Bemrose**

TEC 2 context

Ambulance Victoria's Timely Emergency Care (TEC2) Program is a bold step toward embedding a culture of continuous improvement across the organisation. Built on the internationally recognised Model for Improvement framework, TEC2 aims to build capability in quality improvement and deliver measurable outcomes aligned with Department of Health's (DH) newly established *Performance Standards* for health services statewide. The program focuses on four key areas—Daily Operating System, Transfer, Clearing, and Safe in Place—each targeting a critical aspect of patient care and system efficiency.

TEC2 is more than projects—it's a partnership between AV, DH, and the Institute for Healthcare Improvement (IHI). Through hands-on coaching, capability workshops, and workforce-led innovation, TEC2 empowers teams to test small-scale change ideas, evaluate their impact, and scale successful solutions. This approach builds on the success of the 2024 Timely Emergency Care Collaborative and positions AV to deliver safer, more responsive care while creating a more satisfying and sustainable workplace for its people.

Safe in Place

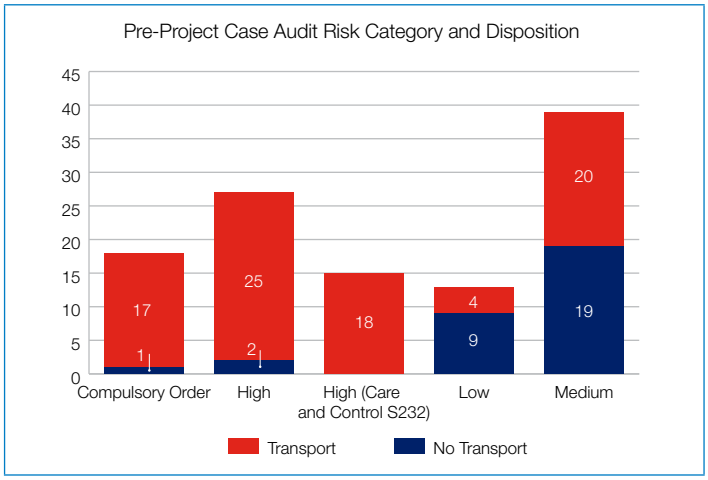
The Safe in Place project seeks to improve the use of alternative care pathways by the clinical workforce—an essential element of AV's accountability under the new DH Performance Standards. When these pathways are not considered, prioritised, or available, patients experiencing health issues in the community may be unable to access the most appropriate and timely care for them and it increases pressure on both AV and ED resources.

The project team—comprising predominantly clinical frontline managers and team members—initially chose to focus on mental health presentations, which make up approximately nine to eleven per cent of AV's clinical workload for advanced life support paramedics.

Project problem

An audit of 115 mental health–flagged patient care records (PCRs) from January to March 2025 was conducted, with each case risk-stratified based on Clinical Practice Guideline (CPG) A0107 – *Mental Health Conditions*. Key findings include:

- 39 per cent (n=45) met high-risk criteria, including 16 per cent (n=18) under *Care and Control (Section 232)*. All but two (both with care plans advising no transport) were transported to ED, in line with CPG recommendations.
- 16 per cent (n=18) were subject to compulsory inpatient orders. All but one, who could not be located, were transported to a health service, consistent with the *Mental Health and Wellbeing Act 2022*.
- 34 per cent (n=39) met medium-risk criteria, where an infield specialist mental health assessment is recommended:
  - Only nine received this assessment, with two then transported by ambulance to ED.
  - Of the remaining 30 who did not receive an assessment, 60 per cent were transported by ambulance to ED.
  - 'Suicidal ideation' and 'not coping' were the most frequent medium-risk features.
- 11 per cent (n=13) were assessed as low risk, where referral to community-based care is recommended. Yet approximately one-third were transported by ambulance to ED.
- Documentation of medium risk features from CPG A0107 was frequently missing from PCRs, even when patients were assessed as suitable to remain at home. With many of these records lacking details on mental health history, current mental health status, and safety netting—particularly in low-risk cases involving anxiety-related presentations.



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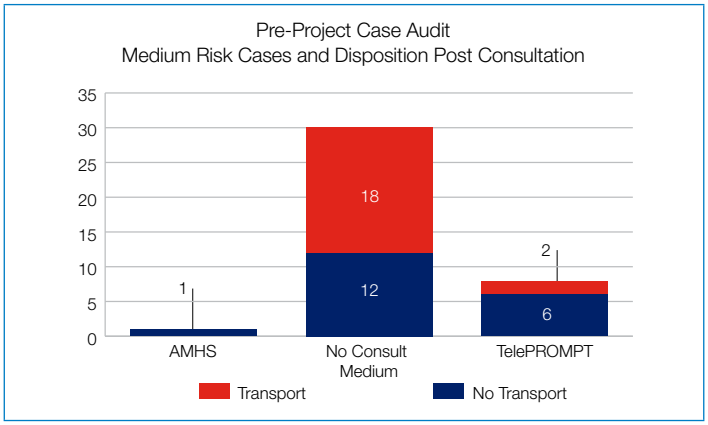


Project aim

To strengthen clinical capability in selecting and initiating the most appropriate care pathway for patients presenting with medium to low mental health risk features.

Objectives:

- Increase infield specialist mental health assessments.
- Reduce unnecessary ED transports.
- Improve the quality and safety of care plans for patients who are not transported.

Improvement cycles: Plan–Do–Study–Act (PDSA)

While PDSA cycles are typically rapid, longer cycles have been required in this project to allow onboarded paramedics to be exposed to medium to low risk cases. These cycles are not only testing changes but are also helping identify current-state challenges and workforce needs.

The first three cycles have focused on:

- Understanding current workflows.
- Trialling CPG A0107 as a risk matrix, as originally intended.

The key element of all three PDSA cycles has been for paramedics to review the risk criteria from CPG A0107 enroute or on scene, assess all listed features, determine the risk classification, and apply the corresponding care pathway.

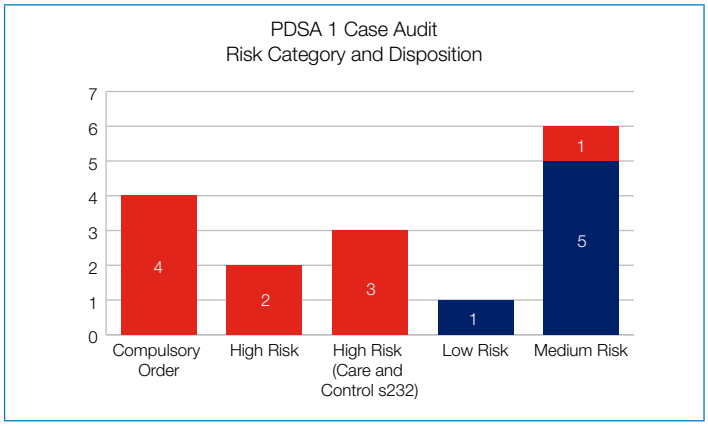
Current process opportunities

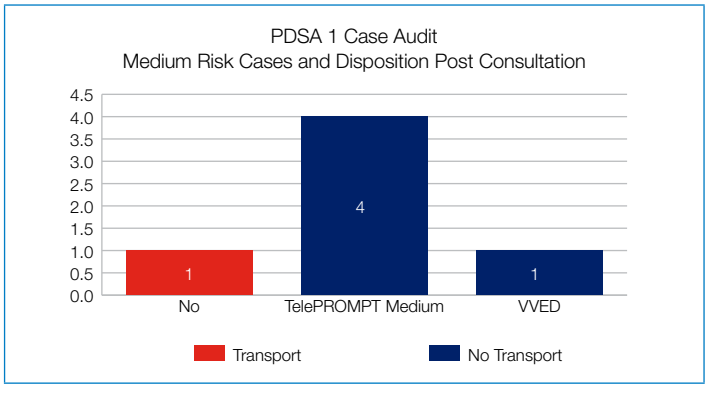
- **Low awareness of CPG A0107 risk matrix:** Many paramedics defaulted to personal judgment, often leading to precautionary ED transport.
- **Frequent misclassification of suicidal ideation:** Often considered high risk despite being classified as medium risk (requires specialist mental health assessment) under CPG A0107.
- **Underutilisation of TelePROMPT:** Despite being the recommended care pathway for medium risk patients, TelePROMPT was seldom used, particularly for those with suicidal ideation. Also, there was limited awareness of TelePROMPT's value in supporting high-risk clinical decisions and facilitating referrals or safety netting for low-risk cases.
- **Uncertainty regarding Care and Control powers:** Limited understanding of Section 232 criteria and paramedic care and control powers under Section 241.
- **Lack of clarity regarding CPG A0708 Acute Behavioural Disturbance:** Paramedics uncertain about when restrictive interventions should be applied.
- **Poor familiarity with Area Mental Health Services** and how to contact them, including 24/7 triage lines.
- **No paediatric mental health CPG:** There is no dedicated clinical guideline for patients under 16, and TelePROMPT is not available for this group—leaving a significant support gap.
- **Unclear escalation pathways:** In complex presentations, many paramedics were unaware of the full range of available decision-making support beyond the AV Clinician. This includes resources such as TelePROMPT, the Area Mental Health Service, the AV Medical Advisor, and on-scene assistance from local or infield frontline managers.

Preliminary Outcomes: Using CPG A0107 as a Risk Matrix

Use of the A0107 risk matrix showed a promising shift in care pathway selection:

- **Cycle 1:** Of six medium-risk patients, four were referred to TelePROMPT (none were transported to ED by ambulance), one was referred to the Victorian Virtual ED, and one was transported to ED without consultation.





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- **Cycle 2:** No medium-risk patients were encountered; of three low-risk cases, one was transported to ED by ambulance (no specialist mental health assessment conducted).
- **Cycle 3:** Currently underway.

To date, 55 paramedics have been onboarded. While exposure to medium to low-risk cases remains below the anticipated level, early findings highlight:

- Increased use of **TelePROMPT** to support medium risk and high-risk care pathway decision-making, particularly in Care and Control (Section 232) scenarios.
- Greater engagement with **local Area Mental Health Services**, especially for paediatric presentations.
- Improvement in the documentation of patient information and decision making in the PCRs.

A key takeaway has been the value of real-time feedback from paramedics following case attendance—helping to identify barriers, address uncertainty, and support ongoing improvement. ■

Safe in Place

Which patient groups are best suited to stay Safe in Place?

By **Melanie Villani** and **Catherine Spiden**

Routine hospital transfer of every patient isn't sustainable or appropriate and is not aligned with AV's Best Care principles. In the AV Ambulance Improvement Plan (FY21/22 to FY 23/24 Strategy) we quantify the time spent transporting patients with lower acuity presentations and the potential subsequent ramping at hospital on our ability to respond to other patients.

In terms of transport rate, jurisdictional comparisons highlight we have room to improve. In contrast to the London Ambulance Service, where 36.3 per cent of patients are left at scene with appropriate care pathways in place, Ambulance Victoria's rate is much lower at 21.7 per cent. The difference in these proportions translates to approximately 150,000 patients annually who could potentially be safely managed without transport.

There is substantial opportunity for Safe in Place; alternative care pathways that allow patients to be safely managed in the community without transport to an emergency department (ED). These pathways support Best Care for patients and ease pressure on the health system by reducing ED congestion and increasing ambulance availability to the community.

One of the Safe in Place pathways, the Victorian Virtual Emergency Department (VVED), has revolutionised how we deliver care by providing timely, clinician-supported alternatives to ED transport. Which patients are best suited to this pathway? We analysed over 470,000 emergency ambulance cases (90,000 from 2019 and 380,000 from 2023) and conducted 1,150 in-depth clinical case reviews to find where the biggest opportunities lie.

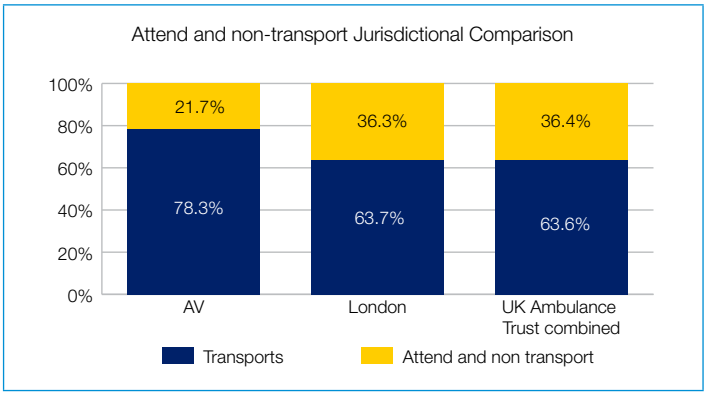

Figure 1: Jurisdictional comparison of non-transport rates. Source NHS England. Ambulance Quality Indicators. https://www.england.nhs.uk/statistics/statistical-work-areas/ambulance-quality-indicators/.

What we did

1. **Identify low acuity groups:** Using 2023 data and 2019 hospital-linked records, we identified low-risk patient groups without red flags or high-acuity care. Cases were grouped by final primary assessment and analysed for transport rate, VVED referral/diversion, and 6-hour discharge rates to find missed VVED referral opportunities. Using hospital linked data, where AV cases are linked with public hospital ED admissions, allows patients to be followed through from prehospital to

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hospital discharge, to understand which people/patients were discharged rapidly.

2. **Select the top priority groups:** We selected 23 high-potential case types based on caseload, low-acuity transport rates, and/or high VVED diversion success.
3. **In-depth clinical case reviews:** 1,150 cases underwent detailed review to assess Safe in Place suitability, factoring in social, behavioural, and medical complexities not readily discernible in the clinical data.

What we found

2023 snapshot (12 months)

- Emergency cases without high acuity features and VVED-suitable case type: 379,852 cases
- Transport rate: 70.8 per cent.
- VVED referral rate: 6.5 per cent.
- VVED diversion rate: 77 per cent.
    - Potential missed opportunity: transported patients who had no red flag vital sign, no high-acuity care, and had not been referred to VVED: 33.2 per cent (approximately 126,000 cases).

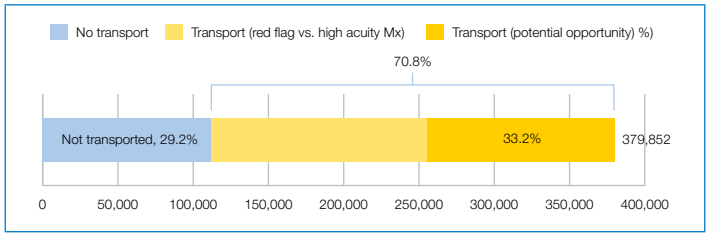

Figure 2: Proportion of emergency presentations without high acuity features with potential opportunity for Safe In Place (2023).

2019 snapshot (three month hospital linked data sample)

- Emergency cases without high acuity features: 91,000 cases approx.
- Transport rate: 80.1 per cent.
- Transported patients who had no red flag vital sign and no high-acuity management: 39.2 per cent.
- Transported patients who had no red flag vital sign and no high-acuity management AND discharged within six hours: 13.2 per cent.

Key trend

The transport rate of patients without high acuity features reduced (from 80 per cent in 2019 to 71 per cent in 2023), suggesting early signs of the impact of VVED and other alternative care pathways.

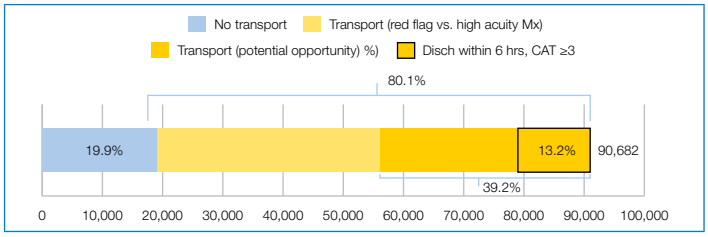

Figure 3: Proportion of emergency presentations without high acuity features with potential opportunity for Safe in Place (2019).

Key clinical groups

In depth clinical review of the prioritised clinical cohorts revealed, on average, 37 per cent of patients with low acuity presentations (i.e. no red flag vital signs and no high acuity management) who were transported to hospital were suitable for alternative care pathways, equating to almost 18,000 cases annually. A diverse range of clinical cohorts most amenable to Safe in Place referral pathways were identified. These included allergic reaction, headache, back pain, muscular pain, palpitations and nausea and vomiting. These were case types with substantial caseload, high VVED diversion and high proportion of cases suitable for Safe in Place pathways. Presentations such as croup and respiratory tract infection were found to have VVED use and low transport rates, reflecting the updated VVED pathways within the CPG and highlighting areas of proven success.

Hospital linked data showed that many of the same patient groups (allergic reactions, epistaxis, faint, headache, hypertension, heart palpitations, and nausea or vomiting) had high rates of 6-hour discharge from ED, suggesting some could be safely managed through other care pathways. *(see following page Figure 4)*

Case studies to highlight Safe in Place pathway opportunities

1. Muscular/soft tissue pain

A crew was called to a 32-year-old woman in regional Victoria, on a weekday at approximately 2200 hours. The patient lives with her partner and had attended ED earlier that day for neck stiffness. She was diagnosed with torticollis and discharged home with Panadeine Forte and Valium. The patient had had the maximum amount of prescribed analgesia and was finding it difficult to get comfortable for sleep. On examination, the patient had no headache, no neurological deficits, no dizziness, and no visual disturbance. She was complaining of generalised neck stiffness and pain rated as 2/10 in severity. She had a history of depression, anxiety, and asthma.

Prescribed medication: Panadeine Forte, Valium. Observations: VSS GCS 15, PEARL, HR 102 bpm (regular), BP 140/90 mmHg, RR 16/min, chest clear, normal respiratory status, skin normal, SpO_2 98% RA, temp 37.5°C, pain 2/10.

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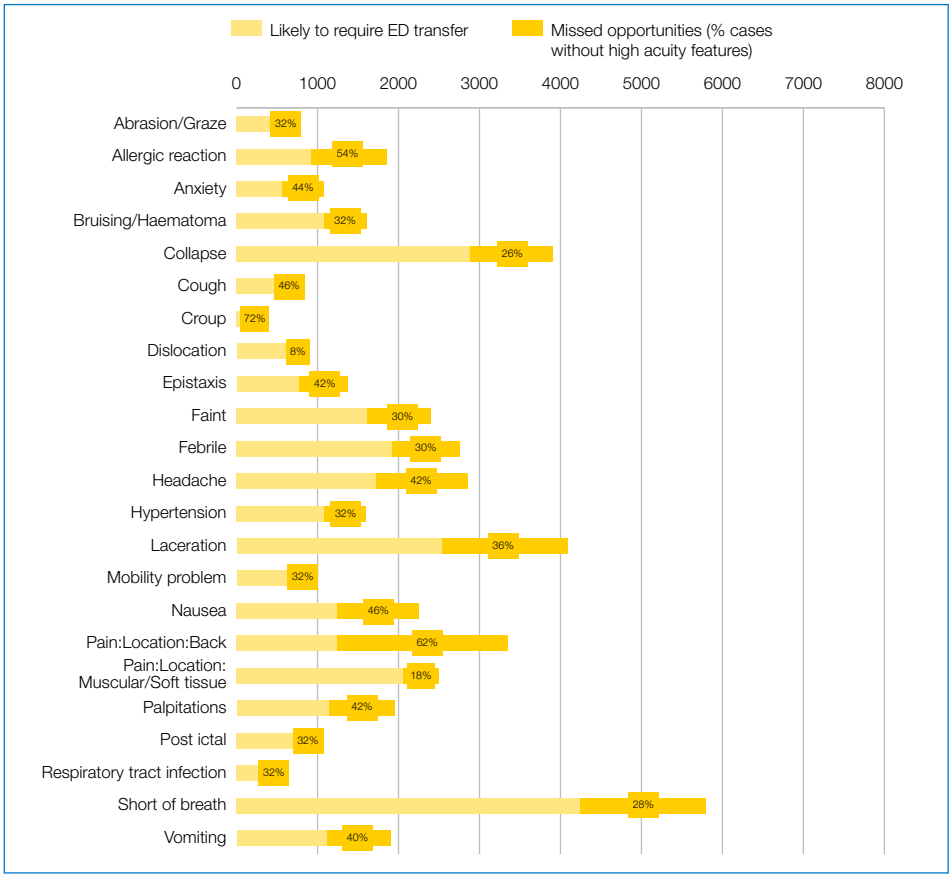

Figure 4: Proportion of low acuity transported cases likely suitable for Safe In Place pathways, by clinical case type.

General Practitioner (GP) or Urgent Care Clinic referral would be suitable for this patient, however the time of day may not have allowed this. Referral to a locum could be considered but is generally difficult in regional locations. Referral to VVED would be suitable due to the patient's ongoing mild pain.

2. Palpitations

At 1600 on a weekday, a crew was called to a 48-year-old woman living in greater Melbourne. The patient described four days of a respiratory illness that presented with cough, lethargy, and fever. Today she woke from a nap with palpitations and shortness of breath and called 000.

On arrival the patient was well perfused and alert. The palpitations and shortness of breath had resolved prior to AV arrival (30 minutes between 000 call and arrival). The patient had no chest pain and presented with symptoms consistent with her current respiratory illness (cough, lethargy and loss of appetite), with no other symptoms noted. This patient has had similar episode two years ago when she was diagnosed with supraventricular tachycardia (SVT). The patient was transported to the local ED.

Past history: SVT, asthma. Prescribed medications: verapamil, salbutamol.

Observations: GCS 15, PEARL, HR 88 bpm, NSR, ECG NAD, BP 159/87 mmHg, RR 16/min chest clear, normal respiratory status, SpO_2 98% RA, skin normal, temperature 36.6°C, BGL 4.2 mmol/L, no pain.

As the patient was no longer experiencing symptoms and the palpitations and SOB had self-resolved, referral to VVED for consultation and ongoing management could have been considered.

Key take aways

Non-transport isn't about taking risks, it's about recognising when a patient may be suitable for a Safe In Place pathway, such as VVED. For patients who don't meet red flag criteria or require high-acuity management, particularly in these identified groups, VVED is there to support our decision-making, even when we're unsure.

The non-transport checklist within the CPGs provides a process for patients being considered for alternative care pathways. The checklist can be accessed via the CPG homepage > Checklists (tick icon at the bottom of the screen) > Other > Non-Transport Checklist.

The Paramedics Assistance Tool (PAT app) gives detailed information on alternate care pathways, including

- Victorian Virtual Emergency Department (VVED).
- Urgent Care Clinics,
- Residential In Reach (RIR).
- Palliative Care Services.
- Mental Health Services.
- Intoxication Services.
- Locum Doctor Service.
- Victorian Poisons Information Centre.
- AV Field Referral – taxi transport, Nursing Services and for Patient Management Plan information.

The Alternate Pathways Podcast and Feedback for up-to-date information in an alternative format.

A simple sheet, a big impact

By **Sam Peart**, Alternate Services Lead

As is often the case in healthcare, some of the most effective improvements are often the simplest. The Patient Assessment Summary Sheet is proving to be one of those small, practical changes making a meaningful difference in the care we deliver.

The Patient Assessment Summary Sheet pilot, which concluded on 20 July 2025, was run across two AV branches, Karingal and Bendigo. While the concept behind the summary sheet is simple, its potential to strengthen patient care, improve handover, and support alternative care pathways has been quickly recognised by both paramedics and our external healthcare partners.

The premise of the summary sheet is to provide patients, their families, and receiving care providers with a brief, written summary of the patient's ambulance assessment, vital signs, clinical management, and recommendations for follow-up care. This aims to replace the common culture of writing advice and assessment details on a blank piece of paper or relying on the memory of patients and caregivers during what can be a stressful time. Providing a tangible 'referral-style' letter that the patient can take with them to a follow-up appointment may help bridge the gap between emergency care and ongoing management.

> "For patients and families, the Patient Assessment Summary Sheet offers clarity."

The summary sheet is designed for patients who are assessed by paramedics but do not require immediate transport to hospital by emergency ambulance. These are useful for patients for whom we recommend follow-up with a General Practitioner (GP), an urgent care clinic, or where alternative pathways such as the Victorian Virtual Emergency Department (VVED) are used to support ongoing care decisions. In some cases, the summary sheet also assists in facilitating safe transfer via non-emergency patient transport (NEPT) organised by AV paramedics when hospital attendance is still appropriate but not immediately time critical.

For patients and families, the Patient Assessment Summary Sheet offers clarity. After an often stressful or confusing event, having written information about what occurred, what was found, and what needs to happen next provides confidence and direction. For our colleagues in primary care, urgent care, and hospital settings, receiving a clear, structured summary of our assessment, including objective data like vital signs and the rationale behind our decisions, supports continuity of care and more efficient handover.

Feedback from paramedics involved in the trial has been overwhelmingly positive. The form's design allows flexibility while encouraging concise, relevant documentation that reinforces safety-netting advice. Importantly, it promotes safe clinical decision-making, risk management, and appropriate use of alternative care pathways, aligning with Ambulance Victoria's broader strategy to support the right care, in the right place, at the right time. After evaluation of the pilot, the summary sheet will hopefully be a tool available for paramedic's service wide.

While the Patient Assessment Summary Sheet pilot concluded in July, its early results highlight how simple tools can have far-reaching benefits when they target genuine gaps in care. Effective handover and transfer of care is a cornerstone of patient safety, and as our models of care evolve, finding practical ways to support paramedic clinical decisions and provide patients with safe, clear guidance will remain essential.

More information about the summary sheet pilot can be found on the Patient Assessment Summary Sheet OneAV page. ■

Patient management team

Role in complex safe non-transports

By **Ella Soydas**, Patient Management Lead

Patient Management Plans (PMPs) provide a pathway for safe non-transport of patients in often complex scenarios that would otherwise result in an immediate ambulance dispatch and transport to hospital. Through collaboration with external stakeholders, well-governed and organisationally supported pathways can be delivered to patients: pathways that are safe, appropriate and therapeutic. Importantly, this supports decision making, while improving patient care and overall ambulance resourcing to the community.

Clinical governance for non-standard/out of CPG decisions

PMPs provide pre-authorised, patient specific guidance that support paramedics to confidently deviate from standard Clinical Practice Guidelines (CPGs) when safe and appropriate to do so. This supports providing patient-centred and individualised care for patients with complex presentations, rather than purely episodic and guideline driven care. This guidance can include alternative care pathways that steer away from transport to hospital.

Shared risk model

Clinical risk is a key consideration when making decisions outside of usual CPGs. A PMP distributes this risk through multidisciplinary shared decision making including the patient's treating medical team and support services, and final approval from key internal decision makers including the AV Medical Director. A PMP outlines agreed strategies, risk thresholds, and safety netting, ensuring paramedics and triage practitioners are well supported in their decision making.

Drivers of ambulance service utilisation

PMPs allow for investigation and addressing of the underlying drivers of frequent presentations to the ambulance service. These are closely tied to the social and structural determinants of health as drivers of inequities in health care access and outcomes. These frameworks give both greater understanding to the complexity of a patient's situation, as well as frameworks to identify and address some of the upstream factors such as housing, transportation, loneliness, and health literacy.

Example

John* is a 50-year-old man who lives in supported independent living accommodation. He has a mild intellectual disability, schizophrenia, anxiety and migraines. He frequently calls 000 with chest pain and shortness of breath, often on a background of anxiety and insomnia. There are documented behaviours of concern on 50 per cent of cases including verbal aggression, often regarding requests for certain AV medication. Paramedics frequently manage John as per CPG A0401 Acute Coronary Syndromes with aspirin, glyceryl trinitrate (GTN) and intra-venous opioids, although it is frequently documented that there appears to be a growing reliance on ambulance and emergency departments to manage what appears to be a primarily anxiety related complaint. All calls are overnight after his support workers have left.

Through initial investigations the contributing underlying factors were identified as his mild intellectual disability, mental health stigma, low health literacy, possible developing dependency on opioid medication, lack of out of hours support, and social isolation.

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Patient Management Plan

A Patient Management Plan was developed with John, his GP, his mental health case manager, the receiving hospital ED consultant, and his NDIS support coordinator. Cardiac causes for John's presentation had been excluded after outpatient cardiology follow-up and repeat presentations to the ED with no cardiac cause identified. His presentation was noted to be consistent with anxiety-related presentations. The PMP supported:

- Diversion of John's 000 calls for chest pain and shortness of breath through to Triage Services.
- Tailored reassurance and communication strategies including breathing exercises. John was given a home copy of these strategies to follow prior to escalating care or calling 000.
- Inclusion of pertinent negatives and clear clinical thresholds where escalation of care would be required – such as diaphoresis and no improvement of symptoms post reassurance strategies.
- Linkage back to his mental health case manager during business hours.
- 'Safe in Place' plan supporting John to stay at home and see his GP the next day. Safety netting was included by notifying his NDIS support coordinator to ensure attendance could be facilitated.
- Support worker hours were adjusted to cover evening shifts, to ensure support for John during periods identified as heightened anxiety and loneliness.
- An Easy English document created by Scope – *'How to Get Help for a Health Emergency'* was provided to John, which aimed to better inform John about the process of calling 000 and the new process of expecting a call back by Secondary Triage involved in his plan.

Effectiveness

	Before PMP	After PMP
Presentations to AV	8+/month	<1/month
Calls managed in Secondary Triage	0 per cent	100 per cent
Dispatches	Code 1: Chest Pain	Call redirected to Triage Services
Ambulance transport rate	90 per cent	0 per cent
AV management	Aspirin, GTN, opioids (90 per cent of cases)	Reassurance, linkage back to existing services
Behaviours of concern	50 per cent of cases, verbal aggression	0 per cent
Patient experience	Distressed, anxious	Better supported in the community

Conclusion

This example demonstrates Best Care in action. This patient centred and collaborative solution has been effective at meeting John's needs and enhancing his experience, while also efficiently managing health resources for the community over the longer term.

Safe in Place

Enhancing safety netting for paramedics when “Nil Transport Required”

A collaborative approach with National Home Nurse

By **Nicole Petzierides**, Alternate Service Lead

After completing a thorough patient assessment, ruling out red flags, and confirming a shared decision with the patient to stay at home, it can still feel like a leap to walk away. Who’s checking on them tomorrow? Will their family follow through on care instructions? Are they safe? These are the kinds of clinical uncertainties we carry as paramedics, and why our partnership with **National Home Nurse (NHN)** can help us confidently leave the right patients at home.

Even when the patient doesn’t need ED, they may still need someone.

A timely NHN referral bridges the gap between paramedic care and the wider health system.

What is NHN?

NHN is a mobile nursing service staffed by experienced and confident registered nurses who provide short-term, in-home clinical care, within 24 hours of referral in participating areas. The team pride themselves in providing creative solutions and encourage referrals from paramedics.

NHN is your in-person safety net.

From post-fall checks to wound care, these registered nurses provide same-day clinical support.

Whether it’s a standard post-fall assessment, complex wound management, catheter troubleshooting, or a verification of death, NHN delivers in person care to bridge the gap between paramedic attendance and the broader health system.

In short, they’re a safety net when a patient doesn’t need ED care but still needs expert attention.

How to refer

AV paramedic field referrals: Phone: 1800 067 549
Operational hours: 0700 - 1900, seven days a week
Overnight referrals: Accepted for next-day attendance
Service areas: Metropolitan Melbourne and Barwon, Greater Bendigo

Call the field referral line and a Triage Practitioner will gather the necessary referral details, send it to NHN, and ensure the patient’s case is visible on the NHN Tracker.

Nil transport doesn’t mean nil care.

Paramedics can initiate meaningful continuity of care through a simple field referral.

Case study: A safer alternative in action

A crew was dispatched to a 64-year-old woman on clopidogrel, following a clear mechanical fall with head strike, and resulting redness to her forehead. The patient remained conscious throughout and presented alert and well. The patient lived with her husband and had strong views about not going to ED.

Clinical decision:

Given the head strike, antiplatelet action, and potential for delayed intracranial complications, the paramedic crew sought a VVED consultation. The VVED clinician agreed that a virtual admission would be appropriate, provided the patient received a timely in-person review to assess for any delayed neurological deterioration.

Intervention:

A field referral was initiated to NHN. Within four hours, a registered nurse attended the patient’s home.

The nurse completed:

- A comprehensive nursing assessment, including a neurological assessment for any evolving signs of deterioration.
- A falls risk screen using the Falls Risk Assessment Tool (FRAT).
- An environmental safety check to identify and mitigate potential fall hazards in the home.
- Support in booking a GP appointment to initiate a My Aged Care referral.

Final thought

Including NHN in the care toolkit ensures continuity of care beyond paramedic attendance. It continues, in person, at home, where it often matters most.

Please direct all feedback relating to experiences with alternate services to:

FARL-App: Log a Referral.pdf or you can email alternateservices.lead@ambulance.vic.gov.au

Enhancing diabetes management through collaborative care

Safe in Place

A collaborative approach to care

By **Sigourney Buttsworth**, Ambulance Paramedic

Managing diabetes requires precision, consistency and support, as these elements can become particularly challenging following a health event such as a stroke. Paramedics attended a case involving Gina*, a 70-year-old woman with Type 1 Diabetes, who relies on an insulin pump and continuous glucose monitoring to manage her condition. Gina had experienced a moderate hypoglycaemic episode, resulting in an altered conscious state, which was successfully treated with oral glucose paste, restoring her to baseline quickly.

Following recovery, a full assessment was conducted, and the crew took the opportunity to explore the cause of the hypoglycaemia and broader diabetes management practices.

Identifying care challenges

Gina, who lives independently with a friend, was previously proficient in managing her diabetes and daily living activities with confidence. However, following a recent mild stroke, she was discharged home without ongoing support or a review of her capacity to continue to manage her diabetes independently. As a result, she was left with mild cognitive impairment and reduced dexterity - subtle but significant deficits that led to challenges such as:

- Forgetfulness leading to hypoglycaemic episodes (administering insulin but forgetting to eat),
- Difficulty managing insulin pump sites and continuous glucose monitors due to impaired dexterity.
- Lack of formal education for Gina's friend, who was eager to help but lacked the necessary training.
- Barriers to accessing healthcare support, as Gina's friend was not recognised as a formal carer.

A collaborative approach to care

Although Gina recovered well from her hypoglycaemic episode and declined hospital transport, the paramedics were concerned about ongoing risks of further diabetic emergencies. Instead of relying solely on traditional emergency care pathways, they explored alternative support options through AV and VVED services.

The crew contacted VVED's Diabetes Pathway, which connected them with a Diabetes Nurse Practitioner who provided immediate education for Gina's friend, empowering them with the knowledge to safely assist with diabetes management at home. Additionally:

- Gina was scheduled for a telehealth consultation with the Virtual Rapid Access Clinic the following day.
- Gina's GP was engaged to ensure continuity of care post-review.
- A referral to an Endocrinologist and Diabetes Nurse Educator was made, as Gina had not accessed specialist care for years.

Reflections and impact

This case highlights the importance of integrated and accessible diabetes support pathways. Without the intervention of AV and VVED, Gina's safety at home would have been compromised, potentially leading to further episodes. The proactive approach, bridging emergency care with community-based diabetes management, allowed Gina to stay safely at home with appropriate support, avoiding unnecessary hospital admission while enhancing her long-term care strategy.

Both Gina and her friend were immensely grateful for the personalised support and collaborative healthcare connections. For paramedics, as frontline practitioners, understanding the real-life complexities of diabetes management reinforces the importance of multidisciplinary teamwork and equitable access to tailored care solutions.

**Gina is not the patient's real name.* ■

Safe in Place

Case study: Navigating complex care for an older adult in crisis

By **Brendan Kinderis**, Clinical Support Officer

Background

Eileen*, an 86-year-old woman placed a 000 call, audibly distressed and crying, reporting she was being "kept by resistance." A woman on scene was reportedly preventing Eileen from leaving. The incident raised significant welfare concerns, prompting dispatch of Victoria Police and a request for AV attendance.

The address was located close to an Urgent Care Centre and over 30 kilometres to the closest hospital. An Advanced Life Support crew was dispatched and arrived within minutes.

Scene overview

Upon arrival, Eileen was seated indoors with police. She appeared alert and oriented but was vague about recent events. A fall was reported to have occurred prior to police arrival, though Eileen denied injury. Notably, she was experiencing progressive confusion, questioning the identity and intentions of her own son.

Clinical observations

Despite being initially agitated toward the AV crew, they were able to build rapport through engaging Eileen in calm and compassionate discussion. Through careful clinical assessment and therapeutic conversation, she was able to deny any current pain or physical concerns and showed no immediate risk to herself or others. However, she repeatedly expressed a sense of hopelessness, frustration about her declining health, and passive thoughts of suicidal ideation, though without a plan or means to do so.

Disposition challenges

Collateral history from her son and the police supported a picture of Eileen's increasing state of confusion and occasional behavioural escalation, prompting the son to leave the property at times. The crew explored various options for follow-up care, including attendance with local medical services. Unfortunately, Eileen's GP was unavailable due to the time of day, and the local Urgent Care Centre had no GP on duty. Transport to the local hospital was ruled out, as Eileen was not compliant, did not appear to have any physical ailments warranting such action and would have required sedation for safe transfer.

Outcome

Faced with limited options and a distressed yet medically stable patient, the crew initiated a VVED consultation. After clinical discussion, the decision was made to adjust Eileen's medication regimen as a bridging measure until a GP could review her early the following week. With support from VVED and agreement from the patient, police and family, Eileen was deemed safe to remain in her home.

The crew cleared the scene approximately two hours after arrival. No further AV attendance has since been required.

Discussion

This case highlights the nuanced and layered complexity involved in caring for older adults experiencing cognitive decline, mental health challenges, and restricted access to local health services. It underscores how crucial it is to build rapport in emotionally charged situations, where a calm and empathetic approach can significantly influence patient cooperation and understanding.

The scenario also reinforces the value of inter-agency collaboration, bringing together the patient, police, paramedics, virtual care teams and family members to ensure holistic decision-making. When traditional care pathways are limited or unavailable, exploring alternatives such as VVED can be exceptionally useful to support patients and avoid any unnecessary escalation.

The case prompts reflection on the limitations of transport-based care, especially when issues of consent, safety, and patient dignity are at play.

Finally, it also prompts reflection on how patient-centred communication, mental health screening, and real-time virtual support can transform paramedic management in challenging situations, allowing dignified, compassionate care without unnecessary escalation.

** Eileen is not the patient's real name.*

Blood culture collection and IV Ceftriaxone by paramedics in suspected sepsis

The PASS Trial

By **Dr Daniel Okyere**, Lead Clinical Trials
Daniel Cudini, MACPara, Intensive Care Paramedic, Clinical Support Officer

Background and purpose

Sepsis remains a critical health challenge in Australia, with patients requiring ambulance transport facing particularly poor outcomes. International guidelines recommend prompt blood culture collection and early intravenous (IV) antibiotic administration for suspected sepsis, yet there has been limited evidence on the feasibility and impact of delivering these interventions in the pre-hospital setting by paramedics. The PASS (Paramedic Antibiotic Sepsis Study) Trial was designed to address this gap, evaluating whether paramedics could successfully collect blood cultures and administer IV antibiotics, and whether this would expedite time to therapy for patients with suspected sepsis.

Study design and methods

The PASS Trial was a prospective, randomised, open-label study conducted between March 2018 and August 2023 across both metropolitan and rural Victoria (Loddon Mallee and Hume). Adult patients (≥18 years) with suspected infection, systolic blood pressure below 100 mmHg, and altered consciousness (GCS < 15) were eligible. All participants had peripheral IV access established and two sets of blood cultures collected. They were then randomised to either standard care (control) or standard care plus 2g IV ceftriaxone (intervention). The primary outcome was the time from paramedic arrival to first antibiotic administration. Secondary outcomes included blood culture results, scene and transport times, ICU admission, hospital length of stay, and in-hospital mortality.

Findings

Enrolments and baseline characteristics: Thirty-five patients were enrolled and randomised in the PASS Trial, with 21 assigned to the control group and 14 to the intervention group. Most patients were enrolled from rural Victoria (77 per cent) and were male (65 per cent). The cohort was predominantly older, with a median age of 81 years in the control group and 70 years in the intervention group. Comorbidities were common: cardiovascular disease was present in approximately two-thirds of patients in both groups, while respiratory disease was more prevalent in the intervention group (64 per cent vs 29 per cent). Over a third of intervention patients were receiving immunosuppressive therapy, and two control patients were dialysis dependent. At presentation, patients were acutely unwell, with a combined median systolic blood pressure of 83 mmHg, a median respiratory rate of 28 breaths per minute, and a median Glasgow Coma Scale score of 14.

Feasibility and safety: Paramedics successfully collected blood cultures in 89 per cent of enrolled patients (31 out of 35), with no predefined adverse events reported, demonstrating that these procedures are both feasible and safe in the pre-hospital environment. Additionally, 42 per cent of the blood cultures collected (13 out of 31) isolated a bacterial pathogen, indicating a substantial diagnostic yield for pre-hospital blood culture collection.

Expedited Antibiotic Administration: Patients randomised to pre-hospital IV ceftriaxone received antibiotics a median of 42 minutes after paramedic arrival, compared to 150 minutes in the control group; a median reduction of 108 minutes (95 per cent CI: 34 to 170 minutes, $P < 0.01$). This significant time saving highlights the potential impact of empowering paramedics to initiate early antibiotic therapy.

Clinical outcomes: Sepsis was confirmed in 25 patients (64.3 per cent in the intervention group and 80 per cent in the control group), and the overall in-hospital mortality rate was 28.6 per cent. ICU admission rates and hospital length of stay were similar between groups, though the sample size limits definitive conclusion.

A message of thanks

The success of the PASS Trial was only possible thanks to the dedication, skill, and adaptability of paramedics from both rural

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and metropolitan regions who participated. Your willingness to embrace new clinical responsibilities: collecting blood cultures samples and administering IV antibiotics in challenging pre-hospital environments has paved the way for future research and innovation in sepsis care. We recognise the additional challenges you faced, including the disruptions and uncertainties brought by the COVID-19 pandemic. Despite these obstacles, you continued to prioritise patient care and research. Your contribution has not only advanced clinical knowledge but has also demonstrated the vital and evolving role of paramedics in improving outcomes for some of our sickest patients.

Conclusion

The PASS Trial shows that paramedics can safely and effectively collect blood cultures and administer IV antibiotics in the pre-hospital setting, leading to significantly faster antibiotic delivery for patients with suspected sepsis. While further research is needed to confirm the clinical impact, these findings are a testament to the professionalism and commitment of paramedics, whose efforts continue to drive improvements in emergency care.

On behalf of the PASS Trial investigators and the broader clinical research community, thank you to all paramedics who participated in this study. Your work is making a difference.

Read the full paper Blood culture collection and administration of intravenous ceftriaxone by paramedics in patients with suspected sepsis (the pass trial)

If you are interested in receiving a full copy of the published article, contact researchgovernance@ambulance.vic.gov.au. ■

Comparing two common preoxygenation strategies used in prehospital rapid sequence intubation

Research Corner

By **Tegwyn McManamny**, Executive Director Quality and Clinical Innovation

Ambulance Victoria (AV) takes great pride in the exceptional work carried out by our Research and Evaluation department, and across various other teams within AV. Their collective efforts drive advancements in knowledge, refining practices and enhancing patient care.

Below, you'll find the abstracts and links to full articles for a recent pilot study led by Hannah Lindsay and the team from Monash University Paramedicine, comparing two common preoxygenation strategies used in prehospital rapid sequence intubation (RSI): the traditional bag-valve-mask with reservoir bag and an oxygen-sparing bag refill valve (RV).

Optimizing Preoxygenation for prehospital emergency anesthesia and air medical transport: A comparative study of bag refill valve and reservoir bag

Abstract

Objectives: Oxygen desaturation is a complication of prehospital rapid sequence intubation before air medical transport. Preoxygenation with a self-inflating resuscitator (i.e., bag-valve-mask [BVM]) device and a reservoir bag at 15 L/min oxygen flow (BVM15) is effective at extending safe apnoea time. The impact of a lightweight, oxygen-sparing bag refill valve (RV) connector on preoxygenation efficacy is unclear. The objective of this study was to compare preoxygenation with a BVM with a RV connector (BVM + RV) with a BVM with a reservoir bag at 15 L/min oxygen flow (BVM15). The primary outcome was percentage of end-tidal oxygen concentration (EtO_2) at 60 and 180 seconds. Secondary outcomes included EtO_2 at 60 and 180 seconds when nasal cannula at 15 L/min oxygen flow (NC) was added to these preoxygenation methods (BVM + RV + NC and BVM15 + NC).

Method: Healthy volunteers were recruited and randomly allocated to receive 3 minutes of preoxygenation using each of the four methods (BVM + RV, BVM15, BVM + RV + NC, BVM15 + NC).

Results: This pilot study found no significant difference in the EtO_2 levels at 60 and 180 seconds between the BVM plus RV and BVM15. However, the addition of NC to the BVM15 setup significantly improved the rate of EtO_2 rise.

Conclusion: Preoxygenation using either a BVM plus RV or BVM15 achieves adequate EtO_2 in healthy volunteers. The addition of NC further enhances rise in EtO_2 levels. Although more research is needed, the RV may be an alternative device to facilitate preoxygenation in air medical services.

Read the research paper: Optimizing Preoxygenation for Prehospital Emergency Anesthesia and Air Medical Transport: A Comparative Study of Bag Refill Valve and Reservoir Bag - Air Medical Journal

National Ambulance Surveillance System Mental Health (MH) harms 2023 (Victoria)

Demographics

34,187 MH-related attendances.

↑ **14%** increase from 2022

38 years median age of MH-related attendances.

56% of attendances were for females, **43%** were for males.

Service Use

Mental Health Symptomology

10,909 Mental health unspecified*-related attendances (**35%**).

↑ **11%** increase from 2022

13,281 Anxiety-related attendances (**39%**).

↑ **14%** increase from 2022

3,808 Depression-related attendances (**11%**).

↑ **23%** increase from 2022

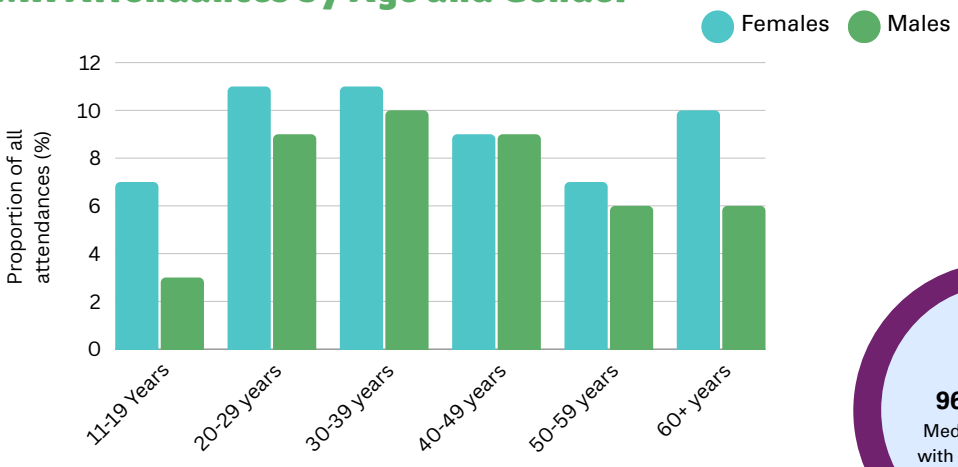
6,934 Psychosis-related attendances (**20%**).

↑ **17%** increase from 2022

*mental health unspecified; presentations that do not fall within anxiety, depression or psychosis (i.e., mania, eating disorders)

72% of attendances transported to hospital.

MH Attendances by Age and Gender



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

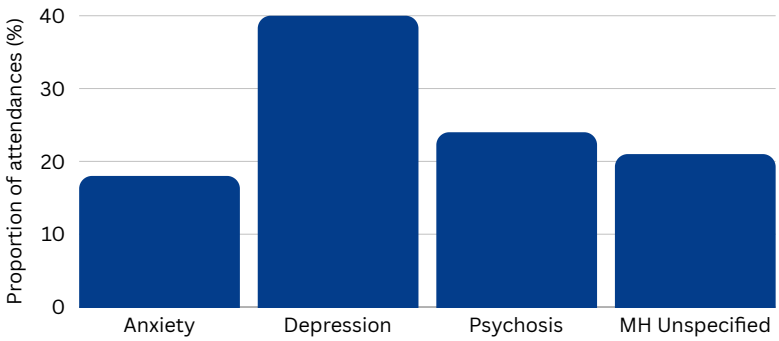
35% of attendances with police co-attendance.

96 minutes Median time spent with patient for MH-related attendances

90th percentile = **176 minutes**

Co-Reported AOD Involvement

22% of all MH presentations had AOD involvement



2023 Mental Health (MH) harms national* averages

*Not inclusive of WA and SA

MH Symptomology

	Victoria	National average
Anxiety	14% increase from 2022	15% decrease from 2022
Depression	23% increase from 2022	15% increase from 2022
Psychosis	17% increase from 2022	15% increase from 2022

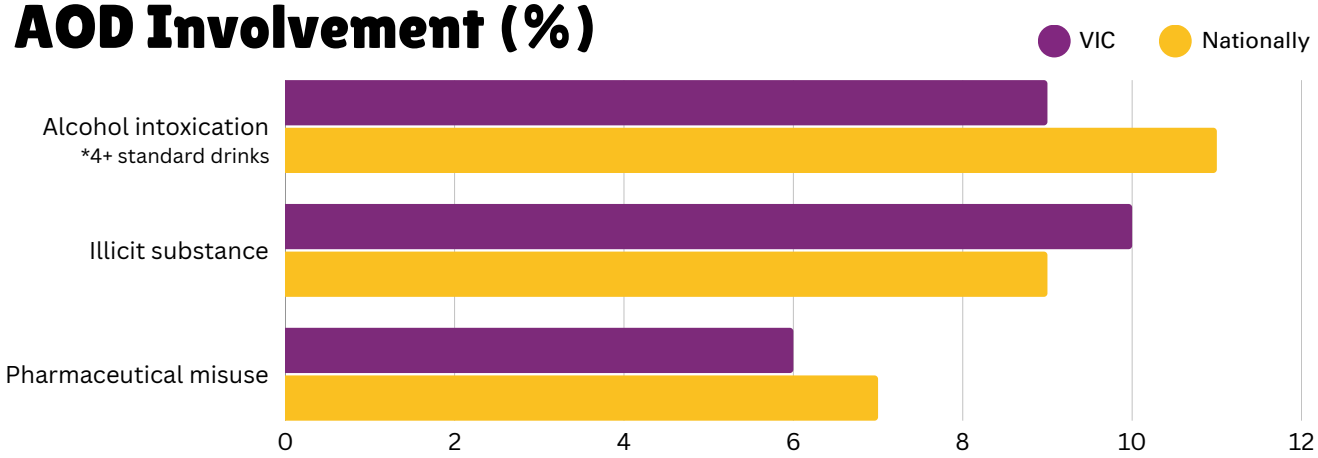
Service Use

	Victoria	National average
Median time spent with patient for MH-related attendances	96 minutes	71 minutes
Police co-attendance	35%	31%
Transportation to hospital	72%	74%

Co-morbidities

AOD-related attendances	22%	23%
Suicide and self-harm related attendances	20%	28%

AOD Involvement (%)



GoodSAM responders arriving before emergency medical services improves survival in cardiac arrest

Research – Impact of GoodSAM on bystander intervention and survival in patients with cardiac arrest

By **Belinda Delardes**, Resuscitation Coordinator, Centre for Research and Evaluation

Background and purpose

Out-of-hospital cardiac arrest (OHCA) continues to be a leading cause of death world-wide[1-3]. Rapid intervention by bystanders with CPR and defibrillation using publicly available automated external defibrillators have been associated with increased survival from OHCA[4-6]. The GoodSAM program was launched in Victoria in 2018 to increase bystander CPR and defibrillation[7]. We have recently investigated the first five years of the program, in particular whether patients who have a GoodSAM responder arrive prior to Emergency Medical Services (EMS) (paramedics or Fire Rescue Victoria) have higher rates of survival to discharge compared with OHCAs where EMS arrived first.

Study design and methods

We conducted a population-based observational cohort study of consecutive non-EMS witnessed OHCAs from VACAR occurring in Victoria, Australia, from February 12 2018, to May 31 2023. Cases were excluded if they occurred in a residential aged care facility, did not receive paramedic resuscitation, the dispatch code was ineligible for GoodSAM activation or occurred during the Coronavirus 2019 pandemic lock-down periods due to the pausing of the GoodSAM program.

Key findings

- A total of 9,196 cases were included, of which 1,158 (12.6 per cent) had a GoodSAM responder arrive on scene, with arrival prior to EMS in 564 (48.7 per cent) cases.
- After controlling for differences in patient characteristics, a GoodSAM responder arriving before EMS resulted in a near eight-fold higher likelihood of receiving bystander CPR (adjusted odds ratio [AOR] 7.59, 95 per cent Confidence Interval [CI] 4.97 – 11.59) and a 16-fold higher likelihood of receiving bystander defibrillation (AOR 15.98, 95 per cent CI 9.23 – 27.66)
- Similarly, a GoodSAM responder arriving before EMS resulted in a 37 per cent higher likelihood of survival to hospital discharge (AOR 1.37, 95 per cent CI 1.02 – 1.85).
- Conversely, a GoodSAM responder who arrived after EMS was not associated with a change to bystander CPR, bystander defibrillation, or patient outcomes.

A message of thanks

In this Australian-first evaluation of the GoodSAM program, we showed that GoodSAM responders arriving before EMS were significantly more likely to provide bystander CPR and defibrillation and positively improve survival outcomes. We take this opportunity to thank the more than 17,000 registered GoodSAM responders across Victoria for the vital contribution they make in enhancing the early response to patients in cardiac arrest. We also recognise the work of our staff across Operational Capability and Strategy and Engagement for their work in promoting the success of the GoodSAM program.

Read the paper by heading to the Medical Journal of Australia website.

If you are interested in receiving a full copy of the published article, please contact researchgovernance@ambulance.vic.gov.au.

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Are you *Resus Ready?*

AmbulanceVictoria

RESUSCITATION IS OUR CORE BUSINESS

At the start of each shift, ensure that you and your equipment are ***Resus Ready***.

Optimise your preparedness by:

- ✓ revisiting resuscitation guidelines
- ✓ familiarising yourself with equipment
- ✓ prioritising pre-shift equipment checks

Airway

- ✓ Full set of SGAs including paediatric sizes
- ✓ BVM circuit: Liquorice stick > HME filter > EtCO2 sensor
- ✓ Laryngoscope (handles, blades and batteries)
- ✓ Orogastric tubes for SGAs

Breathing

- ✓ Adequate oxygen in bag and ambulance
- ✓ Both suction units operationally functional
- ✓ BVM operationally functional (PEEP, mask seal, pop-off override, demand valve and reservoir bag)

Circulation

- ✓ Pre-shift monitor and defibrillation check
- ✓ Monitor battery and spare with full charge
- ✓ Full set of defibrillation pads
- ✓ Shears

CPG App

- ✓ Ensure CPG App is updated
- ✓ Know how to locate 'Resuscitation Checklist' and 'Page per Age' to assist in confirmation of joules setting, pad size and compression/ventilation ratios

Be Resus Ready

- **Stay up-to-date with Clinical Bulletins and CPG updates**
- **Familiarise yourself with resuscitation equipment and troubleshooting**
- **Practise makes perfect: Rehearse HP-CPR regularly, team leader roles, and low occurrence/ high-risk procedures (e.g. airway management, chest decompression, special circumstances).**

Help us achieve our goal of improving cardiac arrest **survival in Victoria by 30% by 2028.**