

The background of the cover is a photograph of a paramedic in a surgical setting. The paramedic is wearing a green surgical cap, a white face mask, and green scrubs. They are positioned on the left side of the frame, looking towards the right. In the background, there are large surgical lights, a monitor displaying a medical image, and an IV drip. The overall scene is brightly lit, typical of an operating room.

# AUSTRALIAN PARAMEDIC

Autumn 2020

In this edition:

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An Editorial Board is being established for the journal. The Board includes a number of experienced paramedics who offer expertise in various areas of paramedicine. The Board's role will be to oversee articles to ensure the content and information is accurate and timely, and to provide advice on direction for the journal. If you have a particular interest in being involved on our Editorial Board we'd be happy to hear from you. We are looking for people with expertise and knowledge of different fields of paramedicine, so when you get in touch please also provide a brief overview of your expertise. Simply email our Editor at [amy@ausparamedic.com.au](mailto:amy@ausparamedic.com.au)

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**WELCOME**

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## About Us

Australian Paramedic is a new journal being delivered to Paramedics across Australia. Our mission is to support and improve patient care through the sharing of knowledge and information from across Australia, and at the same time aid paramedics through delivering current information from recognised and emerging leaders in emergency care.

We are independent from any employer, associations or groups and our aim is simply to provide current, relevant information to the Australian Paramedic. With an Editorial Board (currently in progress) consisting of paramedics and emergency medical professionals we will ensure that the information provided is accurate and timely in this developing professional environment.

Australian Paramedic will evolve over time with feedback and review from readers. The aim of Australian Paramedic is to share knowledge and commentary from experts in the field, as well as provide background information on topics as research and programs develop both in Australia and internationally.

As Australian Paramedic develops we hope to become the leading voice for paramedics to share news, knowledge and information.





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*Australian Paramedic is proud to be independent of any professional association or academic institution.*

**N**EWs at the moment is filled with COVID-19, and as paramedics you are at the forefront of this issue. Advice is changing daily regarding restrictions being put in place and the extent of the spread of the illness. Infection control practices are always important, but are now being talked about so much more, and everyone (including the general public) is being reminded to practice them.

More extreme measures are being put in place daily to curb the spread, which will have ongoing impacts in Australia and the world for at least all of this year 2020. Don't forget to look after yourself in this process. In the coming months more paramedics will be called to patients who have COVID-19, some with mild symptoms, some with severe. The Department of Health is providing regularly updated information and material for all health professionals, so don't forget to keep up to date on the latest recommendations.

Find these online: [www.health.gov.au/resources/publications/coronavirus-covid-19-information-for-paramedics-and-ambulance-first-responders](http://www.health.gov.au/resources/publications/coronavirus-covid-19-information-for-paramedics-and-ambulance-first-responders)

On the lighter side, we hope that this edition of Australian Paramedic will provide some relief from the stress of the crisis, as you take time out reading the journal, maybe with a coffee in hand!

In this edition we have our second peer review article that looks at methamphetamine intoxication and toxicity. A quality article that provides relevant and valuable information for paramedics Australia-wide.

We have our second instalment to the Paramedics and the Law feature, that includes an offer to purchase the book Paramedic Law and Regulation in Australia at a discount, just for our readers. In this time of registration, being across legal issues is extremely important, and it is complicated! This book provides some highly relevant and essential information that everyone should be aware of.

Following on from International Women's Week we have a feature on two Australian paramedic women working in Santo, Vanuatu.

An opinion piece has also been included looking at paramedic response in the 'hot area'. In particular we would welcome your thoughts and comments on this article, whether you agree or not, whether you have an alternative viewpoint or another idea – please share it with us!

We also have a story from a paramedic who has been in the role for a long time and reached a point of questioning his job. His discussion looks at how he coped when his care factor was at point zero.

Our regular items are also included, so enjoy the read and if you have a contribution of your own, don't be shy... send it in!

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# Analysis Of The Need For Paramedics In The Hot Area

By Steven Robertson



At the time of writing, the Christchurch mosque attack took place in New Zealand on the 15th of March 2019. To the 51 innocent people that lost their lives on that day, I dedicate this paper.

## ABSTRACT

**R**ESPONDING to deliberate high threat incidents is inherently hazardous and requires a co-ordinated, all agency response to ensure favourable operational success and decreased mortality for the casualties. This highlights the importance of interoperability and inter-authority co-operation and raises the question of increasing the reach of Australian paramedics, by embedding them into the tactical response. Some Australian ambulance services are training paramedics for the warm area; is there a need to increase paramedical interventions during the active threat?

This narrative review is to analyse current capabilities and raise discussions about the benefit of having specifically trained paramedics to enter the hot area and to respond to active armed offender (AAO) incidents.

This paper refers to tactical paramedics as a high-risk area (HRA) paramedic. The word "tactical" doesn't translate fully to civilian events and causes confusion to some. Throughout this paper, the term "threat zones" refers to the combination of the hot and warm areas, as the intended action area of an HRA paramedic will span across the two designations.

Keywords: tactical paramedics; hot area; warm area.

## INTRODUCTION

During the initial stages of deliberate high threat incidents (active armed offenders, terrorism and improvised explosive devices) it is common practice for Australian ambulance service paramedics to stage in the cold area until declared safe (1,2). Similar countries to Australia have some form of

medical response embedded in enforcement agencies that enter the hot area early in the active event. Evidence shows this can reduce mortality (1,3).

With the increase in deliberate high threat incidents in Australia and changing global politics, comes the potential of increased exposure of non-medical agencies as first responders to critically injured casualties involved in deliberate high threat incidents. Within the Australian context, the majority of the first responders will be police officers. After the initial threat, there is a period before paramedics can and will enter the scene, depending on the declaration of the scene being "safe". It is hypothesised this delay in paramedical intervention can attribute to increased mortality of casualties. Byers, Russel & Lockey (4) advocate deploying suitably trained multidisciplinary teams into threat zones as soon as possible.

Out of the scope of this paper is the role and skillset of a "rescue task force (RTF)" (5), acknowledging an HRA paramedic would have a role to play within this team.

The United Kingdom (UK) has learnt this lesson following the Ambulance Service Association Civil Contingencies committee report 2004. Because of this report, the Hazardous Area Response Teams (HART) became established and fully operational in 2011 (1). The role of HART is to access patients that historically had to wait until Police declared the scene safe for ambulance entry (6).

In 2010, the Queensland Ambulance Service (QAS) Special Operations Response Team (SORT), participated in an active shooter scenario at the Oxley Police Academy. Two SORT paramedics entered the hot area in ballistic personal protective equipment (PPE) embedded in the Queensland Police Services (QPS), Special Emergency Response Team (SERT). Securing two rooms at either end of the scene, and with the protection and assistance from the police medics, the two SORT paramedics began treating and triaging casualties. Anecdotal evidence and first-person experience showed a reduction in mortality of patients that would have historically succumbed to their injuries without this early





medical intervention. Charman (1) supports this anecdotal evidence in the findings from the Derrick Bird shootings in Cumbria, England 2010, as does Heck, Isakov & Bozeman (3), showing paramedics within the threat zones can save lives.

For this scenario, the ambulance staging point was approximately 300m away. Quality triage within the threat zone ensured early evacuation of priority patients to the cold area, as safely as possible, using limited police resources, in this case, an armoured vehicle.

Securing the two rooms changed the scene from a hot area to warm area (5) and with current thinking, would allow the specific paramedics to enter (2). Due to the layout of the scene, there was a large open area on approach to the buildings and unclear locations of the shooters, making the approach to the casualty collection point (CCP) unsafe. The SORT paramedics entered the hot area to establish and secure the warm area, ensuring rapid clinical intervention. Once inside the hot area, the teams decided the tactic of a warm area room was the best method of operation.

Access and treatment of the first critical casualty occurred

within minutes of the response action. With the current protocol, the time taken for Police to establish a warm area and then escort paramedics into the scene would increase mortality by extending the time taken to reach and treat critical injuries.

Both teams established a CCP within 5 minutes. For paramedics to wait for the declaration of a safe scene, to make an entry and access the first critical casualty, an estimation of greater than 20 minutes is plausible. This is anecdotal evidence; establishing the benefits will require further research (7).

In 2010, the skillset of paramedics did not include arterial tourniquets, emergency bandages, haemostatic dressings and chest seals. The inclusion of these "life-saving interventions (LSI)" (5) would significantly aid in the reduction of mortality in an incident like this. (9-11)

This paper does not argue for armed paramedics or paramedics having any direct input into neutralising the threat, the aim is to stimulate discussion around specially trained paramedics entering the hot area, sooner than current protocols allow, with the intent to reduce mortality.

METHOD

An unstructured, non-systematic search of the contemporary literature was conducted to review current evidence and themes. Further refined by a manual search of the reference lists of articles, identified by Google Scholar, the PubMed.gov online database, the Clinical Knowledge network, worldwide Ambulance, Police, Health, Fire services and military website. Filtering all searches, where possible, to include articles published in English and freely available through one of the searched databases.

Databases were searched using the following keywords: "tactical paramedic", "active armed offender", "prehospital", "interoperability" "hot zone", "CBRN response", "aberrant event", "terrorist", "mass casualty", "medic", and "police medic".

Articles were excluded if they did not refer to medical responses in deliberate high threat environments or countries with different social structures to Australia.

The reference list contains the article details meeting the criteria.

DISCUSSION

As agencies develop and enhance the capabilities of their operators during a high threat incident, it is vitally important there is flawless inter-authority co-operation. This was evident in the Coroner's Inquest into the London bombings of 7 July 2005, (12) with the move towards increasing inter-agency training following this incident.

As Australian emergency services breakdown the silo mentality of years past and embrace concepts such as Communities of Practice (13), seamless interoperability and operational performance will increase. The merit of the Communities of Practice concept is to enable learnings by coming together in pursuit of a common goal. The Kerslake report (14) found a commitment to training and interoperability was key to success in the Manchester bombing response.

National Policing Improvement Agency (15) highlights

"True interoperability is built on mutual understanding, familiarity and trust between the emergency services and partner agencies." To achieve this, multi-agency training and exercises are important so that all operators within each agency knows and understands the others' skill base (14). Bobko et al (16) highlight the importance of interoperability as a lesson learned in the 2015 San Bernardino incident where 14 people died and 22 injured in a shooting by two terrorists.

Bobko et al (16) suggest ensuring cohesion and coherent education will provide law enforcement agencies with an understanding of the medical priorities and the medical agencies an understanding of tactical priorities. This was evident in the QAS SORT model as paramedics had a close relationship with SERT, allowing each agency to know the other's goals and objectives, and when time permitted, cross-agency tactical planning occurred. It has been suggested and first-person experience shows, this interoperability and cohesion made the HRA paramedic role safer. This is opposed to the protocols of paramedics attending a high threat incident having no insight into the hostile act at hand and protocol dictating to move to an "ambulance staging point" (5) until called upon (3). Due to lack of planning knowledge and operational intelligence the risk profile to the responding paramedic increases.

A disconnect highlighted during a recent interoperability active armed offender (AAO) scenario, facilitated by the author, there was a difference in equipment being carried by the Ambulance service and the Police service. Issued to the Ambulance service are the Emergency Care Dressing manufactured by First Care (often referred to as the Israeli Bandage) whilst supplied to the Police service are the OLAES Modular Bandage manufactured by Tactical Medical Solutions. Whilst under threat, during the active scene, the differences in bandages confused those operators not familiar with the other bandage. This confusion could lead to increased mortality and did lead to delayed essential haemorrhage control.

The learning from this scenario, albeit anecdotal evidence, was the importance of each agency knowing the skills and equipment of others. Knowing and utilising this information, led to a more positive outcome for the casualties through decreased time to life-saving treatment, reduction of the casualty versus resource equation and enabling the paramedic to move to the next level of care more rapidly.

On highlighting the issue of carrying different models of haemorrhage control dressings, the facilitator conducted a

*Continued >>*





skills station on each bandage. Following the skills station, a repeat of the active armed offender scenario occurred, and the time spent previously on explaining the use of each bandage or overcoming the confusion of use, during the scenario, went to treating injured persons.

This paper argues embedding a trained HRA paramedic with the initial police tactical response teams, will reduce morbidity and mortality of casualties sustained during a high threat incident. HRA paramedics, recruited from the relevant ambulance jurisdiction, have direct contact with and have intimate knowledge of, ambulance operations. Bobko et al (16) showed a disconnection between law enforcement and medical agencies during the San Bernardino incident; although American systems are different to Australian systems, there are some parallels. The Bobko et al (16) learnings support the hypothesis of establishing HRA paramedics. As HRA paramedics have direct contact with the ambulance authority and as such could provide relevant and dynamic operational input to the Incident Commander, such as the continuous evaluation of the medical threat and casualty injury updates. Such an information passage would provide an early predictor of assets and resources required in the cold area along with evacuation strategies and activation of suitable medical facilities.

Moreover, Bobko et al (16) showed a difference in

capabilities of the Special Weapons and Tactics (SWAT) medic and the responding Emergency Medical Services (EMS), leading to lesser resources within the area of impact. Acknowledging the differences between Australian and American systems, currently, police medics who form part of Australian Police Tactical Groups (PTG's), receive limited medical training. Although very good at what they do, overarching governance and organisational restrictions, limit their medical knowledge and skills. These limitations currently restrict the provision of medical resources and skills within the hot/warm area.

The Tactical Emergency Casualty Care (TECC) Guidelines (17) outline treatments for both medical providers and "First Responders with a Duty to Act" not trained as EMS providers. There are treatments outlined that require a solid clinical background to ensure clinical safety in both levels of responders, such as identification of tension pneumothorax, management of hypovolemic shock and truncal injuries. Smith, Shapiro and Sarani (18) further support this by suggesting the finding of latest civilian wounding data did not fit the prototype of exsanguinating extremity injury, showing more truncal trauma and thus did not require the haemorrhage control typically taught to police medics, but rather required rapid extrication, advanced resuscitation and transport.

Police medics do not carry Advanced Life Support (ALS)

clinical knowledge and will provide early and more accurate patient care details between the threat zone and the cold area which, in turn, relayed to the receiving medical facility allows better tertiary preparation. This reflects the TECC guidelines (17) for evacuation care "Provide good communication and patient care data between field medical providers and fixed medical receiving facility."

Ambulance services may suggest placing paramedics within the hot area is a safety issue. It is a given that these situations are inherently hazardous. A counter-argument is strong interoperability and embedding the paramedic into a tactical team will significantly reduce the risk. Abraham et.al (22) studied Army Combat Medics and found a common theme to success was working as a team and "... strong personal trust, loyalty, and cohesiveness that develop



among peers, and leaders and their subordinates in military units, contribute to positive adaptive stress reactions that enhance individual and unit performance."

The only way to develop strong team cohesion is to train and operate as one entity (1). This cannot be achieved if the paramedic is waiting on the sidelines and is ushered

*Continued >>*

equipment and have limited knowledge, skills and experience in paramedicine. This paper hypothesises an HRA paramedic, even with limited resources, could use their knowledge and experience to help balance the causality versus resources equation; where a lesser experienced police medic may apply treatments not required, cause unnecessary harm and deplete valuable resources.

It is also suggested an HRA paramedic is better skilled in triage compared to a police medic and would thus more effectively and efficiently, direct the removal of priority patients. Ongoing threats and the mechanism of injuries complicate triage during "intentional mass violence" events (5). Turner et al (7) identified this as an area of potential improvement and concern. Also suggested, it is possible persons of little experience, such as police medics, to undertake physiological triage based on vital signs rapidly, but the paramedical experience is essential for the accurate sorting of priority patients for rapid extrication.

This was further evidenced by the review of EMS staff and a local disaster relief organisation by Dittmar et al. (19). They looked at the deterioration of triage skill over time following training and they were found to be at an inadequate level after 12 months (19). As paramedics are regularly immersed in triage, through the day to day exposure and annual re-certification, their triage skill will be at a higher level compared to police medics who lack the exposure to triage regularly or if at all.

Solid et al. (20) attributed the success of the triage and evacuation of patients in the Utøya, Norway incident to the competence of the specialised prehospital personnel. They relied on their skills and knowledge of clinical aspects of the health services in the area to ensure quality triage. The TECC Guidelines for First Responders with a Duty to Act (Law Enforcement, Firefighters not trained as EMS providers) (17) states "Utilize a triage system/criteria per local policy that considers priority AND destination to ensure proper distribution of patients." An HRA paramedic will have extensive knowledge of clinical aspects and operational functions of relevant Ambulance and hospital services, compared to a police medic who would not have such intimate knowledge.

Increased on-scene casualty management is possible with an HRA paramedic located in the threat zone, who is gathering, receiving and distributing real-time information. Establishing cold zone areas, based on this real-time information, is vital to safety. Bobko et al (16) found during the 2015 San Bernardino incident, a lack of communication between agencies resulted in a treatment area being set up in a hot area. (21). HRA Paramedics have the greater



OPINION

into the scene when declared safe or if they attend initial training in warm area procedures and then never refresh or exercise these learnings. Real-life interagency simulation training provides stress inoculation and allows each agency to become aware of the operating procedures and protocols of the corresponding agency, which strengthens teamwork and resilience (23).

Further to this, paramedics showed an increase in confidence and ability in entering an active armed offender incident when the responders received focused training (24). Recent training and perceived paramedic resilience were shown to indicate increased response readiness to high threat incidents (25). Increased knowledge of high threat incidents and focused training in such, would give HRA paramedics honed risk management skills and confidence to operate safely (6). The Kerslake report (14) showed a pragmatic approach to risk, honed through training, was beneficial in the Manchester bombing.

Ambulance services have experienced similar integration into specialist teams with the evolution of rotary-wing operations. Earlier in the history of aeromedical services, paramedics were called in from “off the road” to attend helicopter responses. Now they have progressed to be an integral part of a full-time aeromedical team. Practical experience and involvement in this transition have shown helicopter operations are safer due to the increased training, increased exposure and awareness of paramedics to the risks.

To strengthen this point, experience from the SORT concept has shown a reduction in the risk factors when integrated into a focused team. The paramedic needs to be an integral part of the tactical response and in turn, this will decrease the risks and increase the chance of mission success.

HIGH-RISK AREA PARAMEDIC ATTRIBUTES.

Abraham et.al (22) found Army Combat Medics had developed four characteristics and skills: “social bonding, readiness, loyalty as performance, and leader by example.”

Clinical skill and experience are paramount, but where does the question of physical and mental attributes sit?

Recruitment of HRA paramedics needs to be a highly selective process and requires tradesperson like abilities; being able to rapidly adapt and complete the task using available resources and pragmatically assessing the scene. Physical strength and fitness should be essential attributes. Moving casualties some distance to CCPs as a single responder, constantly moving through changing environments, and carrying equipment all while working in

a high-stress situation (6).

For selection of HRA paramedics, interested candidates need to self-nominate; experience has shown with a group of people selected without discrimination there will be a certain percentage who doesn’t want to and/or will not complete the task (26). The HRA paramedic needs to be resilient; Abraham et al. (22) suggest the process of positive adaption occurs because of stressor management works towards resilience, despite adversity, trauma or other significant sources of stress. The ability to be resilient increases the capability to make informed and high-quality decisions whilst under threat (23). This is important not only for quality patient care but paramedic safety and situational awareness.

Some Ambulance Services have tasked their highest clinically trained paramedics with the responsibility of entering the warm area. In general, these paramedics possess a highly advanced skill set, which often requires time, space and assistants, something lacking when working in the warm area. This raises the question of whether this is the best clinician to have in the hot/warm area. The superior clinical skills and knowledge are better utilised in the cold area, to reduce mortality and morbidity, as well as providing high-level clinical supervision and leadership to a larger cohort of patients and paramedics.


Another consideration is how to station and utilise HRA paramedics when not responding with police. Value for money is always an issue and acknowledged, HRA paramedics cannot just be sitting around waiting for high threat incidents. One suggestion is to adopt the operational procedure that uses a designated operational boundary, and daily ambulance caseload responses are limited to this. Allowing the HRA paramedic to attend to routine operational responses to the local area, but a quick response if a high threat tasking occurs.

A rotational roster through the relevant Police group for a selected time then back through normal ambulance operational duties is a sound strategy. This strategy minimises skill degradation in both environments.

Reviewing published articles, relying on firsthand experience and anecdotal evidence suggests specifically trained paramedics in hot and warm areas will reduce mortality and increase operational success. Several authors recommend having paramedics within the hot areas to reduce mortality and have a positive influence on the operational outcome of high threat incidents.

Having paramedics embedded in the Police teams gives

Continued >>



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the Police commanders confidence in sending non-police personnel into high threat incidents and reduces the time taken for paramedics to commence LSI in the hot area. This was evident with the SORT concept. Police commanders through exposure and cross-training, showed great confidence in allowing SORT paramedics to don ballistic protection and to establish within the threat zone.

To this, paramedics embedded in the tactical response and becoming members of a focused team will increase interoperability and be beneficial to risk reduction, paramedic safety and increased operational success.

A discussion on the complete skill sets required of HRA paramedics is beyond the scope of this article however it is acknowledged that extra tactical training of medical personnel is important for operational success in the threat zone. The specific role HRA paramedics play in an RTF is outside the scope of this discussion.

Supported by a stringent selection process, allowing for the right person to operate within this challenging environment will also increase operational success and reduce the risk profile of such operations. HRA paramedics need to possess a certain character, skillset and mental resilience. This paper has brought forward the concept of strict and focused recruitment on this role. Recruiting without selection has the potential to add risk to the paramedic, police officers and the outcome of the operation.

Paramedics have a far deeper understanding of pre-hospital treatments, concepts and practices. Combined with the intimate knowledge of the Ambulance and health services of that area, they will be able to triage, treat and sort casualties far more effectively and efficiently than a police medic. This combination leads to a more balanced resources verse patient ratio and allows the best care possible for the most patients.

Evidence shows quality triage is important and paramedics are constantly involved in triage and injury severity identification. Triage in high threat incidents is highly complex and have added physiological stressors. The aim of focused and evidence-based training of an HRA paramedic is to reduce the physiological stressors and increase decision making whilst under stress. HRA paramedic skills and knowledge have the potential to increase the survivability of victims of intentional mass violence.

Further research is required to test this paper's hypothesis and in turn direct Ambulance services in meeting the capability gaps with contemporary, best practice knowledge.

One outcome of this discussion is to increase interoperability of responding agencies which will, in turn, save lives. "All agencies must address the challenge of effective coordination of emergency response, treatment and rescue of victims, and the de-escalation and resolution of any threat." (5). Sufficiently trained and supported HRA paramedics is one strategy to meet this statement made by Australasian Fire and Emergency Services Authorities Council.

#### CONCLUSION

The intention here is to encourage discussion around the requirement to have HRA paramedics within Australian ambulance services.

Acknowledging HRA paramedics are a controversial topic, but given the correct leadership, operational guidelines and direction the HRA paramedic skill would arguably be an asset and contribute to saving lives.

Australia has not been exposed to regular hostile acts but changing global politics may change this. Ambulance services may need to evaluate their mindset and require an unparallel response to such events and train appropriate personnel to meet the demand.

#### ABOUT THE AUTHOR

*Steven Robertson is an Inspector in the Emergency Management Unit which manages QAS state-wide response to major events and disasters.*

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*He has had experience as a manager at various stations in metro, rural and remote – Gold Coast, Northern Peninsular Area and Central West Queensland and has worked as an underground paramedic on QAS mine contract outside of Emerald.*

*Steven's passion is to progress QAS's specialist paramedic response and preparedness.*

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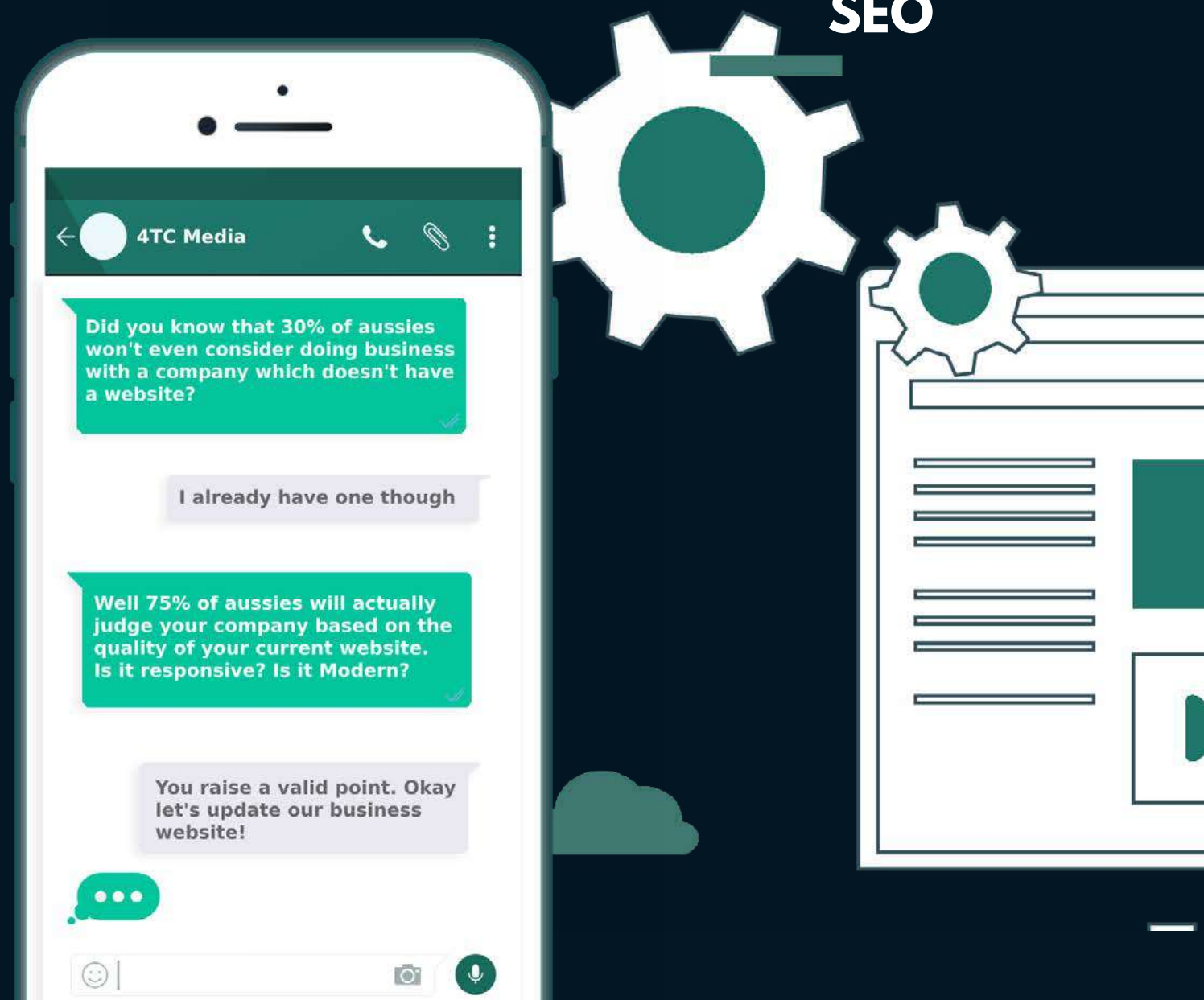


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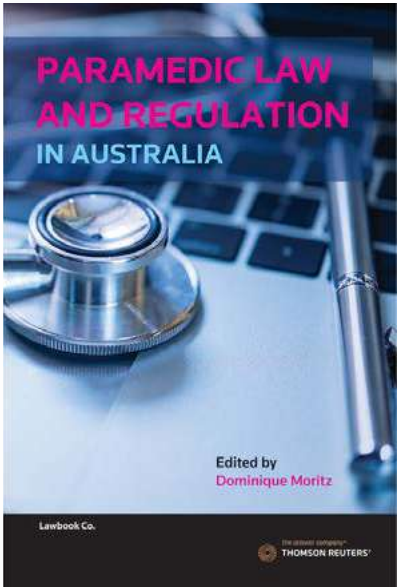


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# Paramedic Law & Regulation in Australia: Foundational Concepts

By Dominique Moritz & Phillip Ebbs



**L**AW AND ETHICS is essential knowledge for paramedics. While paramedics will often not need to explain their actions and decision-making, there will be rare occasions across a paramedic’s career where their work may be subject to considerable scrutiny from the courts, lawyers and the broader community. Without a sound legal and ethical knowledge, paramedics may be liable to face disciplinary action, civil penalties or criminal charges for their interactions with patients. In this sense, law and ethics fundamentally intersect with every aspect of a paramedic’s role.

The purpose of this article is to provide a small number of key insights into law and ethics relating to Australian paramedics. In particular, we focus on the delivery of care (including the administration of drugs), and the transport of sick or injured patients.

Paramedic Law is considered to fall within the broader context of Health Law, which is concerned with how the law relates to healthcare issues. With paramedics being intrinsically involved within the healthcare system, Health Law governs paramedic functions. At a minimum, an Australian paramedic generally has two important and foundational functions:

- 1 Pre-hospital medical care; and
- 2 Transportation of sick and injured patients.

**Pre-hospital medical care**

Paramedics are exhibiting more autonomous decision-making than ever before. Paramedics rely on law, policy, ethics and evidence to make decisions relating to patient



care. While the law – in the form of legislation and case law – must be followed at all times, policy relates to how an organisation might deliver patient care within the realm of the law. Policies provide a broad decision-making matrix with multiple options for paramedics to consider; however, the final responsibility for implementation of those policies at the 'bedside' rests with the paramedic.

For example, paramedics need to diagnose and treat the condition that the patient is suffering. Policies and evidence will help inform the paramedic about what the true diagnosis is and the proper course of treatment required. However, the final decision for diagnosis and treatment of patients lies with the paramedic. Sometimes diagnosis and treatment may be difficult; however, this does not remove the onus of responsibility from the treating paramedic.

Paramedics therefore have a significant responsibility to the community to provide timely diagnosis, treatment and advice. Given the significant amount of autonomy and discretion afforded to paramedics – as well as time demands and the stressful environment in which paramedics operate – there can be a significant potential for unintended harm during the delivery of pre-hospital medical care. This makes an understanding of law and ethics even more crucial for paramedics.

The role of the paramedic in diagnosing, treating and providing advice to a patient in the out-of-hospital setting is a significant one. In order to provide this type of patient care lawfully, effectively and in a manner commensurate with community expectations, paramedics must:

- 1 Uphold a standard of professionalism at all times
- 2 Be registered as a health practitioner under the National Registration and Accreditation Scheme; and
- 3 Understand that complaints about their conduct can result in disciplinary action.

(For more information, these three items are addressed in Chapters 6 to 8, respectively, of the book Paramedic Law and Regulation in Australia, which is edited by Dominique Moritz).

Paramedics also have additional responsibilities towards their individual patients. They must:

- 1 Obtain patient consent and respect valid refusal of treatment (Chapter 9);
- 2 Understand how mental health can impact upon patient treatment (Chapter 10);

- 3 Understand their obligations when treating children and other vulnerable groups of patients (Chapter 11);
- 4 Keep adequate records and maintain confidentiality (Chapter 12);
- 5 Understand the complex procedural and coronial system related to a patient death (Chapter 13); and
- 6 Treat patients competently and avoid causing harm to them (Chapter 14).

Drug Administration

The paramedic's administration of drugs to patients provides another example of how the law intersects with paramedic practice.

Some of the drugs administered by paramedics are highly addictive and/or have the potential to cause death or serious injury to patients if not administered correctly. For example, paramedics in all States and Territories of Australia can administer morphine, high doses of which can cause patient fatality due to the potential for creating respiratory depression. Further, patients with a drug addiction may also seek morphine when they cannot access other opioids. As such, the power for paramedics to administer morphine, and other similar drugs, is significant given the potential for patient harm.

In order to deal with emergency situations where dangerous drugs are needed, paramedics have been granted legislative powers to administer certain restricted drugs which would normally require a medical doctor's prescription. These provisions grant a positive power for paramedics to possess and administer particular dangerous drugs, such as ketamine, which would otherwise amount to criminal conduct.

Drugs are classified at a Commonwealth level (classifications apply Australia-wide), which is then further regulated within each State and Territory. The Poisons Standard October 2018 (Cth) ('the Standard') contains the Standard for Uniform Scheduling of Medicines and Poisons established under s 52D of the Therapeutic Goods Act 1989 (Cth). The States and Territories use the schedule of drugs set out in the Standard to maintain jurisdictional uniformity of drug classification. Drugs are classified into schedules according to their level of seriousness; the higher the schedule, the more serious the drug. The most commonly used drugs administered by paramedics, which have restrictions imposed, are:

- 1 Schedule 4 drugs; and
- 2 Schedule 8 drugs.

The list of schedule 4 drugs, which paramedics might administer include, amiodarone, atropine, benzatropine, cefttriaxone, frusemide, hydrocortisone, ipatropium bromide, metoclopramide, midazolam and promethazine. Paramedics may also administer fentanyl, morphine and ketamine which are schedule 8 drugs. Paramedics are also able to administer certain schedule 2 and 3 drugs (which are usually only available in a pharmacy) as well as unscheduled drugs. Common paramedic drugs which fall into these categories include adrenaline, aspirin, glucagon, glyceryl trinitrate, paracetamol and salbutamol. Schedule 2 and 3 drugs are considered to have a lower chance of causing harm to the patient or public when compared to schedule 4 and 8 drugs.

Many drugs administered by paramedics are subject to very specific legal requirements for record keeping. Currently, the requirements vary throughout Australia. Generally speaking, paramedics must maintain drug registers and undertake record keeping following patient drug administration in most jurisdictions. A drug register, or a record book, is a catalogue allowing entries to be made in relation to the administration of scheduled drugs. The Northern Territory, Victoria, Queensland and the Australian Capital Territory require a register to be kept for administration of schedule 4 drugs.

In relation to schedule 8 drugs, most ambulance services are required to keep drug registers to record various details, including the quantity of the drug, particulars of the paramedic administering the drug and the circumstances relating to the drug's administration. Other jurisdictions rely on their ambulance service to prescribe record keeping requirements or do not have record keeping requirements for paramedics at all. Penalties for contravening drug register requirements in the Australian jurisdictions range from fines of up to \$15,000 or an imprisonment period of up to three years. This means that paramedics can be criminally prosecuted for breaching the legislative drug

register requirements.

Adequate drug storage is also required; however, jurisdictions may express different standards for the storage of drugs. Schedule 4 drugs must usually be kept in a space which prevents unauthorised access, and must be kept separate from food and beverages. Storage of schedule 8 drugs usually requires them be kept in a locked room or vehicle when not in use. Penalties exist for contravening the legislative requirements for drug storage, including fines and imprisonment.

A privately employed paramedic must be granted a statutory exemption or drug licence by their State or Territory government to be able to legally possess or administer dangerous drugs in Australian jurisdictions. A person who is not endorsed to possess schedule 8 drugs under the relevant legislation can risk a substantial fine or criminal charges. Even if the paramedic was previously authorised to administer schedule 8 drugs as a result of their employment with an ambulance service, once their employment ends (or they are operating independently of the ambulance service) they cannot automatically administer the drug, despite any qualifications they may have. To continue administering schedule 4 and 8 drugs, they must rely upon an employer organisation's licence, or they must obtain a statutory exemption.

Transportation of sick and injured patients

When transport to hospital is warranted, paramedics often endeavour to deliver their patient quickly and safely. In the historical days of stretcher-bearers and ambulance drivers, these practitioners were 'transport workers' only and did not usually possess medical or health-related qualifications or skills. (Indeed, recruitment for ambulance drivers in the early days of Australian ambulance services required only that applicants possessed a driver's licence and arrived wearing a collar and tie!)

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In current times, the modern paramedic has at their disposal a number of treatment, referral and advice options which may not always involve the patient being transported to hospital. This being said, the safe and efficient delivery of patients to hospital for further treatment is still an important role of the paramedic.

In order to safely deliver patients to a hospital, paramedics have been granted statutory powers. Statutory powers are supports endowed by parliament in a relevant jurisdiction which allow certain people to do something which would otherwise be considered a contravention of the law. For paramedics, speeding and driving through red traffic light are examples.

When driving an emergency vehicle, paramedics have certain exemptions from adhering to the road rules. Each State and Territory has road rules which must be obeyed by all road users. Generally, road users who contravene the road rules can be subject to fines and other penalties. However, certain road rules may not apply to paramedics if they are driving an emergency vehicle and the vehicle is displaying appropriate flashing lights (usually red and/or blue) or sounding an alarm (such as a siren). This exemption applies to paramedics working in the public sector and who are rostered on to a shift as part of their employment.

In addition to the above requirements, the paramedic must also be taking 'reasonable care' and it should also be reasonable that the specific road rule provision should not apply. For example, paramedics might be taking 'reasonable care' if they slow down at a red traffic light and ensure other road users have stopped before driving the ambulance through the intersection. The road rule exemptions from traffic infringements demonstrate the high level of trust

the community has in paramedics as it prevents sanctions being imposed upon paramedics who are acting reasonably in emergency situations and allows paramedics to get to patients (and to the hospital) as quickly as possible.

The road rule exemptions are not an excuse to break road rules. It is important to note that the road rule exemptions do not apply to paramedics in every situation. Paramedics cannot rely on the road rule exemption if:

- 1 They are off duty;
- 2 They have not enabled lights and/or sirens in their vehicle; and/or
- 3 They work privately outside the public ambulance sector.

Paramedics also cannot rely on road rule exemptions if they contravene criminal law in their jurisdiction. For example, it is a criminal offence in Queensland to drive a vehicle dangerously. Driving or operating a vehicle at a speed in excess of 40 km/hr over the speed limit is considered to be dangerously operating a vehicle. For paramedics, the fact that they might be responding to an emergency does not automatically exempt them from criminal law.

If a paramedic contravenes the criminal law dangerous driving provisions in their relevant State or Territory, they are liable to prosecution. While the paramedic may have been driving to assist a patient in an emergency situation, and while a court may consider these circumstances as a mitigating factor in their sentence, the paramedic can still be required to go before a court to respond to criminal charges and then potentially have a criminal sentence imposed upon them.



The road rule exemptions demonstrate how legal and ethical issues intersect with paramedic practice. While paramedics may merely be 'doing their job', failing to act within the boundaries of the law could result in serious consequences for paramedics. As such, it is crucial for paramedics to understand the potential consequences for failing to meet their legal obligations.

**Further Reading**

This article has only briefly touched on key insights into law and ethics relating to Australian paramedics. A potential resource which provides further information for paramedics is the textbook *Paramedic Law and Regulation in Australia* which is edited by Dominique Moritz. When writing this textbook with Dr Moritz, the authors have considered that readers may not have a detailed understanding of the law or the Australian legal system and, as such, complex legal concepts are discussed and presented as simply as possible.

The law related to healthcare generally applies on a State and Territory level. As such, each State and Territory may have a different legal position in relation to some legal issues. Where the law is different between jurisdictions, most chapters within this textbook explain how the law applies in each jurisdiction. Where the law might be substantially similar, the chapters may consider the main similarities between those jurisdictions.

Paramedics have a crucial role in society. With paramedicine being a registered health profession, there are

many obligations and duties which paramedics owe to their patients and the community which did not exist historically. As such, it is necessary for paramedics to have a working knowledge of the vast (and sometimes complicated) legal and ethical issues related to paramedic practice in Australia.

**ABOUT THE AUTHORS**

*Dr Dominique Moritz is the editor of 'Paramedic Law and Regulation in Australia' which is published by Thomson Reuters. Dominique is a lawyer, former police officer, and Lecturer in Law at the University of the Sunshine Coast. Her doctoral studies evaluated why paramedicine should be regulated as a registered health profession under the Health Practitioner Registration National Law Act 2009. Dominique believes that paramedics are superheroes.*

*Phillip Ebbs is a Senior Lecturer in Paramedicine at Charles Sturt University. Phillip has extensive experience in the fields of paramedic clinical governance, education and practice, and is published internationally in these fields. He is a contributor to the text 'Paramedic Law and Regulation in Australia' which is edited by Dominique Moritz and published by Thomson Reuters.*

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# METHAMPHETAMINE INTOXICATION AND TOXICITY

By Jackson Turner

## INTRODUCTION

**M**ETHAMPHETAMINE is a strong stimulant of the central nervous system and is a widely used drug of abuse. First synthesised in 1893 by Japanese chemist Nagai Nagayoshi, methamphetamine was initially used as a weight loss drug and a treatment for attention deficit disorders. Methamphetamine grew in popularity amongst recreational drug users in the late 20th century because of the strong stimulation and euphoric effects the drug produced. Legislated control of manufacture and distribution saw the rise of the illegal methamphetamine trade across the globe.

Today, methamphetamine is available in many forms. Crystalline methamphetamine (or 'Ice') is the most potent form which may present clinical management challenges for Australian paramedics.

This article provides an overview of methamphetamine intoxication and toxicity in the Australian out of hospital setting. It will report on the relevant pharmacology and identify the clinical manifestations and medical emergencies associated with acute intoxication and toxicity. The article concludes by discussing

key considerations for the clinical management of methamphetamine intoxication and toxicity in the out of hospital setting

## BACKGROUND

According to the 2016 National Drug Strategy Household Survey (NDSHS), 6.3% of Australians aged 14 years or over have reported the use of methamphetamine at least once in their lifetime<sup>1</sup>. Additionally, 1.4% of the population admitted to recent use of

methamphetamine (in the previous 12 months) with up to one-fifth of these using on a weekly basis<sup>1</sup>. The most popular form of the drug amongst regular users is crystal methamphetamine or 'Ice', which is a highly purified crystalline form of the drug that is reported to be up to four times more potent than the powdered form (which is known as 'Speed')<sup>3</sup>. In 2016, 57.3% of regular users chose Ice as their preferred form, which has significantly increased since 2010<sup>1</sup>.

While the National Centre of Education and Training on Addiction (NCETA)

has identified a gradual decline in the total percentage of methamphetamine users Australia wide<sup>2,4</sup>, data from NDSHS has identified an increase in the percentage of people who use methamphetamine at least once per week<sup>1</sup>.

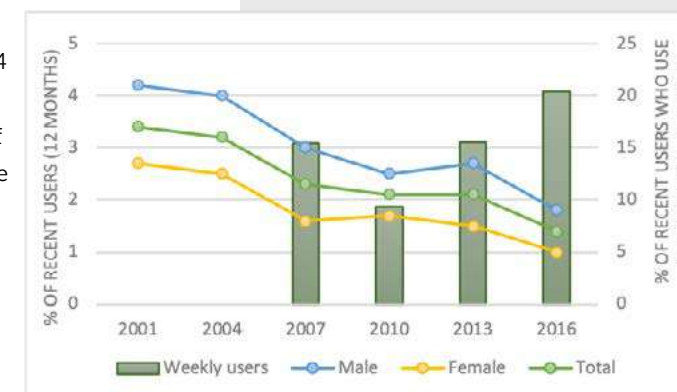


Figure 1: Proportion of Australian who have used methamphetamine in the last 12 months, and percentage of regular users who use methamphetamine at least once per week.

Source: Australian Institute of Health and Welfare. 2016 National Drug Strategy Household Survey (NDSHS)

Another Australian study conducted in 2016 has identified that young people between 18 – 39 years of age that live in remote and very remote regions are significantly more likely to have used methamphetamine within the last 12 months<sup>3</sup>. The NDSHS has noted that the percentage



of regular users is 2.3 times higher in these regions compared to major cities<sup>4</sup>. These statistics are also reflected by the increasing population rates of ambulance attendance for methamphetamine related illness across the state of Victoria. A review of drug and alcohol related ambulance calls in Victoria shows that call outs for ambulance services are increasing faster in regional areas compared to metropolitan Melbourne<sup>7</sup>. It was also reported that there was an overall 47.7% rise in methamphetamine related ambulance callouts state wide from 2014 to 2015<sup>7</sup>, and this number is likely set to increase over the coming years.

Methamphetamine related illness and hospitalisation appears to be on the rise in Australia. A paper published by Queensland Health reported that Queensland hospital admission rates per 100,000 people from methamphetamine related illness has increased from 3.9 in 2009/10 to 79.9 in 2015/16<sup>25</sup>. Hospital data also shows that 35% of stimulant related hospitalisations in 2013 were due to methamphetamine compared to 19% in 2008<sup>24</sup>. Overall the workload of methamphetamine related cases for Australian paramedics appears to be steadily growing. Paramedics can expect to see an increasing number of presentations each year; this highlights the importance of appropriate out of hospital management of methamphetamine intoxication and toxicity.

## PHARMACOLOGY

### Pharmacodynamics

Methamphetamine is a psychostimulant drug that acts on the central nervous system (CNS), causing the release of the

monoamine neurotransmitters dopamine, serotonin and nor-adrenaline<sup>4</sup>. The process by which methamphetamine increases the concentration of monoamines is through multiple pharmacological mechanisms. The primary action is redistribution and reverse transport of the neurotransmitters from presynaptic vesicles to the cytosol. Methamphetamine blocks uptake and precipitates efflux of dopamine, serotonin and nor-adrenaline through the vesicular monoamine transporters VMAT1 and VMAT2, resulting in redistribution of neurotransmitters from synaptic vesicles into the cytosol of the neuron<sup>10</sup>. The monoamines are then reverse transported into the synapse via monoamine transporters<sup>5</sup>.

It has been identified that methamphetamine is a potent

agonist of trace amine-associated receptor 1 (TAAR1) which regulates catecholamine activity in the brain<sup>8</sup>. TAAR1 activation reverses the direction of the dopamine (DAT), serotonin (SERT) and nor-adrenaline transporters (NET) by triggering phosphorylation of the transporters via protein kinase A and C<sup>8</sup>. Methamphetamine has also been shown to increase calcium concentrations inside the cell triggering further dopamine efflux<sup>9</sup>. Reversal of the transporters results in significant outflow of monoamine neurotransmitters into the synapse (mechanism of action shown in figure 2).

Furthermore, methamphetamine inhibits the action of monoamine oxidase A (MAO-A) and monoamine oxidase B (MAO-B). MAO-A and MAO-B regulate normal brain function by degrading monoamine neurotransmitters through oxidative deamination. In the presence of methamphetamine, the action of MAO is blocked, prolonging the effect of dopamine, serotonin and nor-adrenaline on the post synaptic neuron.

In addition, methamphetamine is also known to increase the expression of tyrosine hydroxylase, which is responsible for the synthesis of L-Dopa<sup>5</sup>, the precursor molecule of dopamine. Resultantly increasing intracellular concentrations of dopamine. Due to the complex combination of mechanisms,

methamphetamine is a highly potent monoamine neurotransmitter releaser.

### Pharmacokinetics

Methamphetamine can be administered orally, nasally, intravenously, or through inhalation. The most common route of administration in Australia is smoking<sup>1</sup>. Following inhalation of the drug, peak plasma concentrations are reached within 2.5 (±0.5) hours<sup>11</sup>. Methamphetamine is distributed to most areas of the body and due to its highly lipophilic properties, can cross the blood brain barrier faster than most other stimulant drugs<sup>11</sup>. The metabolite amphetamine peaks in concentration 10-24 hours post administration. Methamphetamine is largely metabolised in the liver by enzymes CYP2D6, dopamine β-hydroxylase, butyrate-CoA ligase and glycine N-acyltransferase then excreted by the kidneys. The half-life is variable between 5-30 hours<sup>11</sup>.

## METHAMPHETAMINE AND OTHER PSYCHOSTIMULANTS

Methamphetamine is detailed as one of the most addictive and potent psychostimulant drugs available today. This is due to the differing mechanism of action compared to other psychostimulants that are used for non-medical purposes, including cocaine and MDMA (3,4-Methylenedioxymethamphetamine).

### Cocaine

Cocaine produces its effects by binding to the monoamine transporters and blocking the reuptake of the neurotransmitters from the synaptic cleft, resulting in the accumulation of dopamine, serotonin and nor-adrenaline. Resultantly,

the increased concentration of the neurotransmitters in the synapse causes prolonged stimulation of post-synaptic neurons, producing euphoria and increased levels of energy and alertness. The effects of cocaine are short lived compared to methamphetamine as cocaine has a half-life of 0.5-1.5 hours and is rapidly deactivated by plasma butyrylcholinesterase<sup>22</sup>.

### MDMA

MDMA (3,4-Methylenedioxymethamphetamine) has a similar action as methamphetamine, however it has a higher affinity to serotonin transporters compared to dopamine and nor-adrenaline<sup>10</sup>. Users have described the use of MDMA as a drug that increases happiness and euphoria, without significant increases in energy that methamphetamine produces<sup>26</sup>. Similarly, to methamphetamine, MDMA is a TAAR1 agonist resulting in reverse transport of monoamine neurotransmitters<sup>26</sup>. However, the tenfold affinity to serotonin transporters causes mainly serotonergic effects when MDMA is administered. Increased levels of serotonin lead to increased feeling of euphoria, empathy and sociability, mild hallucination and stimulation. In addition, MDMA does not block the action for MAO-A and MAO-B, allowing for gradual degradation of the excess neurotransmitters. Resultantly, the half-life of MDMA is also shorter than Ice at 8 hours<sup>26</sup>.

## METHAMPHETAMINE INTOXICATION AND HEALTH EMERGENCIES

### Intoxication

The clinical effect that Ice has on an

individual varies according to many factors including, potency of the drug, dosage, route of administration and duration of use. The acute release of neurotransmitters results in feelings of euphoria, increased levels of concentration, energy and wakefulness as well as increased libido and self-confidence. It reduces appetite and leads to various behavioural responses<sup>12</sup>. The adrenergic effect results in acute tachycardia, transient hypertension and mydriasis<sup>11,12</sup>. Clinicians may be suspicious of methamphetamine intoxication if patients display any of the following signs: Dilated pupils that react slowly to light, jaw clenching, repetitive movements such as picking or scratching skin, rapid speech, restlessness or pacing. Furthermore, patients presenting with Ice intoxication may present with tachypnoea, chest pain, GI upset, hyperthermia, diaphoresis, agitation, confusion and psychosis<sup>11,12</sup>.

### Toxidrome

Following a high exposure to methamphetamine, a range of cardiovascular and cerebrovascular conditions can develop, having the potential to precipitate many medical emergencies. The conditions that may progress include ventricular dysrhythmias, myocardial ischaemia and infarction, vascular dissection and acute renal failure secondary to rhabdomyolysis<sup>11,13</sup>. It has been reported that a major factor of cardiovascular dysfunction is vasoconstriction resulting from excess α-1 adrenoceptor stimulation<sup>11</sup>. Methamphetamine toxicity can also cause seizures, strokes, hyperthermia, acute renal failure and coma. There have been many fatal cases of Ice intoxication, typically resulting

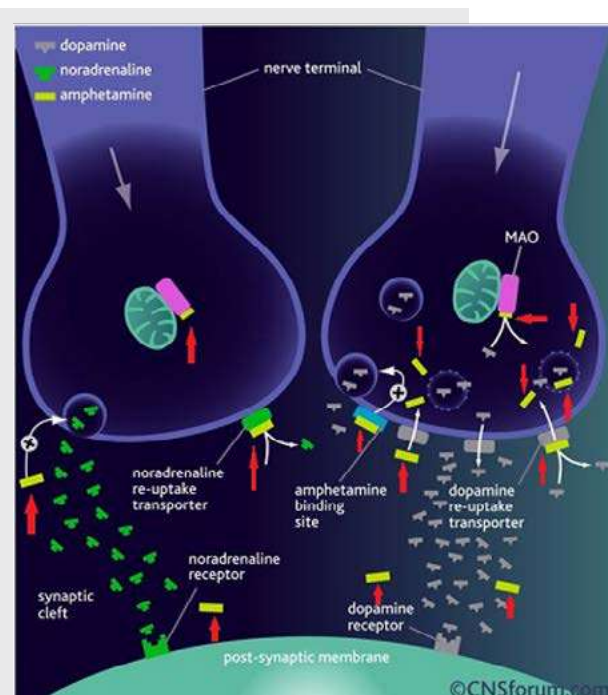


Figure 2: Mechanism of Methamphetamine -

Methamphetamine reverses direction of monoamine transporters through activation of TAAR1, efflux of monoamines from vesicles into cytosol and inhibition of MOA-A and MAO-B. Resulting in increased concentrations in the synapse.

Source: <https://www.pharmacology2000.com/Autonomics/Adrenergics1/Adrenergic-32.htm>



from cardiac dysrhythmias, acute myocardial infarction, seizures, hypoxia and subarachnoid haemorrhage<sup>11,14</sup>.

### Chronic use

In addition to the acute effects of methamphetamine use, chronic abuse has shown to cause many conditions including cardiomyopathy, congestive heart failure, pulmonary hypertension and cognitive impairment<sup>11</sup>. Long term depletion of dopamine has been shown to cause irreversible neuronal damage and has also been linked to the development of parkinsonism<sup>11</sup>. The results of neuronal damage can include lasting psychosis, accompanied by visual and auditory hallucinations, delusions and paranoia<sup>11</sup>. Neuronal damage in the brain often effects memory as well as motor and sensory function, leading to permanent cognitive impairment<sup>11</sup>.

In addition, physical changes also occur due to the use of methamphetamine. The physical changes are most often due to malnutrition and poor hygiene. 'Meth mouth' is a common physical complication of chronic abuse and is characterised by excessive decay of tooth enamel. This condition is often due to neglect and poor oral hygiene, as well as xerostomia and bruxism<sup>11</sup>. Methamphetamine toxidromes or potentially fatal overdoses are less likely to occur among chronic users. The effects of methamphetamine become diminished with time and higher doses are often administered with fewer side effects compared to new users<sup>15</sup>.

### TREATMENT CONSIDERATIONS

When treating a patient displaying signs of psychostimulant intoxication,

it is important to determine whether the cause of the behaviour is in fact drug related or due to an underlying pathological condition. Patients presenting with Ice intoxication often have altered vital signs, altered cognitive state and erratic behaviour. Gathering a history, taking into consideration social context or location, age and pattern/mechanism of injury is important if drug involvement is suspected.

### Acute behavioural disturbance

The primary aim when treating patients who are displaying aggressive, violent or psychotic behaviour is to ensure the safety of the paramedics, the patient and others at the scene. Physical restraint alone may be ineffective for individuals intoxicated by methamphetamine and can often escalate the situation<sup>16</sup>. Research suggests there is potential to cause greater harm to the patient and the National Centre for Education and Training on Addiction (NCETA) national drug strategy suggests the use of verbal de-escalation should be attempted early to gain control of the situation<sup>17</sup>. NCETA states that this may decrease the risk of cardiovascular deterioration secondary to overstimulation and hyperarousal<sup>17</sup>.

Effective methods of verbal de-escalation include speaking in a calm and polite tone, listening to the patient, using their name and keeping a consistent voice tone irrespective of the patient's communication style<sup>17</sup>. Individuals intoxicated by Ice are more likely to respond positively to communication they perceive to be non-aggressive<sup>17</sup>.

If verbal de-escalation is unsuccessful – and if the patient continues to pose a risk to themselves or others – physical restraint and/or chemical sedation

may be necessary.

Two potential sedative agents available for use in the pre-hospital setting include Midazolam and Droperidol. Midazolam is a short acting CNS depressant that increases the action of the inhibitory neurotransmitter gamma-amino butyric acid (GABA) to produce sedative effects<sup>18</sup>.

Droperidol is an anti-dopaminergic agent from the butyrophenone group which inhibits the effects of dopamine on D2 Dopamine receptors within the CNS. Droperidol has anti-psychotic properties that causes a state of mental detachment and sedation of the patient<sup>18</sup>. Both drugs have a history of use as a sedative in the pre-hospital field. It is recommended to use the drug and dosage indicated by local guidelines.

### Assessment

In addition to normal consideration of safety, primary assessment and any life-saving interventions, systematic assessment of all body systems is recommended (including neurological, cardiovascular and respiratory) as methamphetamine use can precipitate systemic injuries. Common complications of methamphetamine toxicity include ischaemic chest pain, arterial dissection, dysrhythmias, seizure, stroke and coma<sup>11</sup>.

A vital sign survey should be conducted early if it is safe to do so, as well as a history of the current illness or presenting condition from those on scene. It can often be difficult to establish the previous medical history from users as they may be in an acute state of cognitive dysfunction. However, important information that paramedics may find useful include the drug/medication that was taken,

dosage, route of administration and how long ago they took it.

Due to excess CNS stimulation, expected vital signs of acute intoxication may include tachycardia, hypertension and hyperthermia. Cardiac monitoring may be utilised to identify any cardiac pathologies, as ischaemic pain and dysrhythmias are often associated with methamphetamine intoxication and toxicity.

### Treatment

Patients suffering methamphetamine intoxication or toxicity are usually treated symptomatically for complications and injuries evident in the out of hospital setting. As such, continuous assessment of the patient, monitoring and vital sign observations (where able to be obtained) will help to guide paramedic treatment.<sup>17</sup> Cardiac related complications should be considered because ischaemic chest pain and acute myocardial infarction can result from methamphetamine toxicity. This is commonly due to coronary vasospasm from excess  $\alpha$ -1 adrenoceptor stimulation<sup>11,21</sup>.

The use of methamphetamine has also been shown to be a risk factor for strokes and other neurological emergencies<sup>21</sup>. Signs that the methamphetamine patient requires urgent transport for neurological assessment and treatment may include, seizure activity, weakness, respiratory difficulties, slurred speech, facial droop, sudden headaches and partial paralysis<sup>17,21</sup>. A suggested summary of treatment goals for these patients has been provided in Box 1.

### CONCLUSION

Methamphetamine use can cause a wide range of adverse effects ranging

### Box 1:

*Summary of treatment goals for Methamphetamine intoxication and toxicity*

#### Suggested treatment goals

- Ensure safety of the scene for emergency service personnel and patient
- Treat immediate life threats (airway, breathing, circulation, life threatening haemorrhage)
- Recognise signs of intoxication
- Generally, these patients are treated symptomatically for illness or injury that becomes evident in the out of hospital setting
- Manage behavioural disturbance if necessary (verbal de-escalation is usually prioritised, followed by physical and/or chemical restraint in accordance with local legislation and guidelines)
- Complete full vital sign survey and obtain accurate history where possible
- Undertake a systematic evaluation of the major body systems (neurological, cardiac, respiratory)
- Continuous monitoring of patient until arrival at the emergency department



from neurological, cardiovascular, and psychological conditions. Use of the drug is potentially dangerous, even at low doses, while acute and chronic effects can cause serious or fatal toxidromes.

This article has presented a brief overview of methamphetamine, including its historical background and pharmacology. Considerations for the assessment and treatment of

patients suffering methamphetamine intoxication or toxicity have been presented. Continuous review and discussion of available evidence will assist paramedics as they deliver the best possible care to these patients in the out of hospital setting.

*For a list of references please contact the Editor:*

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<sup>1</sup> Funds under administration as at 30 June 2019. Net assets include the retirement funds managed by QSuper and employer-sponsor receivables for Defined Benefit members managed and held by Queensland Treasury. <sup>2</sup> Chant West Super Fund Fee Survey, September 2019. The Chant West data is based on information provided by third parties that is believed to be accurate. Chant West does not issue, sell, guarantee, or underwrite this product. The findings are based on account balances of \$25,000 and \$50,000. Only administration and investment fees and costs are covered. Fees are gross of income tax. Go to [chantwest.com.au](http://chantwest.com.au) for further information about the methodology used and Chant West's Financial Services Guide. For the QSuper Investment option, Lifetime option Focus 1 only. Fees are only one factor that you should consider when deciding how to invest your super. <sup>3</sup> Superannuation: Assessing Efficiency and Competitiveness. No. 91, 21 December 2018

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# Care Factor Zero:

A discussion on despondency within your career

By John Basely



## "The dream is sometimes better than the reality"

**T**HIS is a phase which I have shared in the past with my co-workers, doctors and other medical staff; sometimes even using it with my children when they purchase a Kinder Surprise and find the gift inside not all that it is built up to be. There comes a time in our career, our holidays, or the purchases we make where we question ourselves. Have we made the correct choice? Is it time to upgrade the item we bought? Should we cut short the plans we had on our holidays? Maybe we could change our careers?

I write this article based on my own time as a paramedic of sixteen years and hope it may resonate with at least one person who might be asking the same things as I did. Where I found myself being despondent and questioning if it was time for me to leave and seek another path in my work life.

I consolidated my thoughts into one sentence when questioned one day by a co-worker about how I felt being a paramedic. At the time it was "I don't know what I want to do, but I do know what I DON'T want to do". I didn't want to be a paramedic anymore.

We all need a sense of direction and purpose in our lives to give meaning in our time here, but when this focus becomes blurred or out of sight all together, we can start to wonder – what is all this for anyway? Outlined below are some insights of what helped me re-calibrate my thoughts instead of remunerating on the negative aspects on a career that I was passionate about and loved so much.

### 1. REMEMBER WHY YOU INITIALLY BECAME A PARAMEDIC IN THE FIRST PLACE.

My background was military, which naturally comes with an element of certainty. The certainty of a fortnightly pay cheque, the location I was based, and my group of friends. However, what was also great was the small element of UNCERTAINTY in regards to the short notice deployments I went on, the other countries I knew nothing about and the different organisations I had to deal with. To me this was exciting, but as I said there was the base of certainty grounding all of this.

After the military, I worked in finance (yes – a bit of a change). This line of work was fine to start with, but the day in – day out office work; the same thing everyday with no change was TOO much certainty and I didn't last long. I became a paramedic soon after.

There are generally three epochs in a phase of any endeavour – the first is the excitement and stimulation of understanding new concepts, thoughts and ideas, sharing them with others and getting a direct result from your actions. When I first started as a new paramedic I was in a class of people who I did not know. We were all new, understood nothing, looked up to those who taught us, we wanted to succeed, we wanted to impress. Full of enthusiasm and a willingness to help.

This time went quickly and I enjoyed every moment being presented with a large variety of situations that made me question, think and act and reflect on the jobs I attended. I became a paramedic for the variety in everyday work and wanting to help other people where I could. The satisfaction of seeing a direct result of the things I had learnt and the outcomes – and there was the underlying certainty of the income, the location I was based, and my group of friends.

Then comes the second stage of a career or endeavour – the consolidation of learning. We have acquired this new knowledge and now we can utilise it. By a process of utilisation of the skills we have learnt, we find what works and what doesn't. Provide a course of treatment for a condition you thought was the cause of the symptoms, then finding out it was something else entirely different. The reward systems in our brains trigger dopamine and serotonin when we do something right. We feel good about ourselves, the decisions we made, the positive outcomes for the patient. However, over time our "we feel good about ourselves" receptors become numb to this sensation because we have entered the third and final epoch.

The part where we have learnt from experience many times, we make the right choices most of the time, those feel good chemicals don't have the same effect on us anymore like they once did when we first started out. Our job can become boring, stale, even mundane. Unfortunately, what happens is that the brain still wants to be stimulated by something – anything – and this is where we then can tend to focus on all of the negative things in our workplace.



So, the first point is to remember what it was that bought you to this career and what you were like as a person at that time. Focus on this point. For me it was to help one patient at a time and make their lives better than it was before I came along.

2. GET YOURSELF OUT OF THE NEGATIVE FEEDBACK LOOP.

Instead of returning to work each day thinking that some things are miraculously going to get better (big tip – they most probably won't), break the cycle of routine and be honest with yourself and others. My strategy here was to apply for some leave. My clinical team leader at the time on applying asked if everything was alright. I was at this stage not worried about my truthful answer and said 'no' – everything was not okay. I had grown despondent in my career – doing the bare minimum to keep qualified and I thought with the underlying apathy I could be in a situation that I could compromise the best possible care for my patients unintentionally. Best not to have a paramedic turn up in a bad, grumpy mood, when you as a patient are feeling at your worst!

Be upfront, be honest. Because if you don't and choose not to say anything, to smooth things over and not rock the boat you will find that in two years' time, you will just be two years more despondent, two years more resentful, and two years older. The paramedic profession is said to be one of the most trusted professions, but it is also one of the most stressful medical professions as well.

Second point to remember is to stop – take leave – reassess with a clear mind and thought process before making any long term plans about leaving the job you once held so close to your heart.



3. PRACTICE GRATITUDE

This may seem very esoteric, but hear me out. There is a saying that the current situation that you find yourself in

(paramedic earning a good income in a first world country complaining that someone has left a coffee cup on the bench at work) is something another person can only dream about. Think of the competitive nature of those wanting to become a paramedic today – so many want to be what you already are.

For fifteen minutes a day, look outside yourself and observe others around you. Parked outside the shopping centre waiting? Look at the person collecting trolleys for minimum wage because it is the only thing they have right now. Want the new Mercedes E-Class sedan? Ask the person who already owns one and find out why they lust after the next model up S-Class.

Look at the situation the patients you attend may be in – there is a high chance that they would love to be in the current health that you are in right now. The trouble with comparing ourselves with others, is that we tend to compare the best parts of other people's lives (fame, wealth) to our own situation, but don't think of the negative aspects that may be going on in those we aspire too.



4. TAKE OWNERSHIP OF THE SITUATION YOU ARE IN

The harsh reality is that when you blame others for ALL of the bad things that are going on in your career, family, life, or financial situation – you then by default can't accept responsibility for ALL of the good things that have happened. By blaming others, you are saying to yourself that you have no control of your situation.

So, if we take this out a little further, we can separate any situation into three categories –

- 1. Things we can control
- 2. Things that we can have influence on and finally
- 3. Things that we have no control on at all.

1. The first list is small – we can only can control the things that we think, the things we can say and the things that we

do. These things in life are the only things we have 100% control on.

2. The second group – the things we can influence, but can't guarantee the outcome. The things such as telling our patients all of the critical reasons they need to go to hospital, but against all advice they stay home.

3. The third group – the things we have no control. This is anything outside of us that we have no contact with - the weather, sports team results, bureaucracy.

So if you find yourself in a situation that is not going the way you thought it would, think to yourself "what have I done to be in this situation" (i.e., not liking your job), and "what can I do, what can I think, what can I say that is in my power to change the situation I am in now".

SUMMARY

Thank you for reading to the end. I can see that this could come across as a Tony Robbins motivational speech monologue, but it is a consolidation of some readings, discussions with colleagues and thoughts I had whilst taking some time away from the career I loved, but had grown to be a job I found myself no longer enjoying.

We can't do the same thing, day in, day out – and expect a different result. Take pause, assess where you want to go

and what you want to do in the next year coming, and do it with all the enthusiasm you have.

“Make the best use of what is in your power, and take the rest as it happens”

– Epictetus

ABOUT THE AUTHOR

John Baseley has been a Paramedic for 16 years with SA Ambulance Service after being in the Australian Army for 11 years. After completing BHSc in 2006, he followed his interest in Psychology with Flinders University, focusing on Cognitive Behavioural Therapy and Addiction Studies with Uni Tasmania. In his spare time he enjoys photography, studying philosophy and he reads old (44BC) stoic texts from Cicero such as "How to grow Old" and "How to win an Argument".

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# ISLAND PARAMEDICS:

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## Adventures in caring

*By Steve Whitfield*



Have you ever wondered what it is like to drop everything, pack your bags and stethoscope and travel to a remote corner of the earth? Meet Elise and Olivia, two Australian based paramedics from diverse backgrounds who shared the common goal of adventures in caring, and did just that!

**H**ELD GLOBALLY in March each year, International Women’s Week recognises and celebrates the achievements of women internationally. As part of this celebration we thought it fitting to interview these two ladies who are currently providing professional ambulance care within Vanuatu’s main ambulance service, ProMedical on the remote island of Santo.

Vanuatu is a Pacific island nation made up of 83 islands within the geographical confines of the South Pacific. Approximately a quarter of a million people inhabit this archipelago with a predominately rural population that creates geographical challenges in health care.

Working with their Vanuatu counterparts since February, I had the pleasure of catching up with them on the tarmac for a quick chat following a successful remote retrieval.

*Can you tell us who you are and where you’re from?*

**Liv.** I am from Victoria, Australia and completed a Bachelor of Nursing and Paramedics in 2016. Since then I have worked as a Paramedic with Ambulance Victoria.

**El.** I am from North Queensland, Australia. I worked as a Theatre Nurse for a couple years before recently completing a Post Graduate Diploma of Clinical Services (Paramedics) with Charles Sturt University.

*What inspired you to volunteer as a paramedic here in Vanuatu?*

**Liv.** I’ve come to realise that many people don’t have the luxury of a professional ambulance service and the geographical challenges in northern Vanuatu mean that sometimes there are long delays. I want to use my skills and assist all people get help regardless of location just as we would expect at home.

**El.** I was looking for a way to keep my skills up to date and I have always considered volunteering but never been able to find a program where I was actually able to use my skills and not just observe. Vanuatu was recommended to me by a colleague and once I did some research I was sold. Who wouldn’t want to work in a tropical paradise?

*Being so remote, what are some of the clinical challenges that you have experienced or expect?*

**Liv.** Often you can be the only qualified paramedic on duty on the island, servicing 40,000 people. Santo has large stretches of land with roads and infrastructure which has suffered from floods and lack of maintenance. One job can take a whole shift, and for some of my colleagues one job even took multiple days of camping in local villages. Luckily ProMedical has a critical care paramedic on call from the main island for any consults, unfortunately much of Santo island is out of range rendering cell phones sometimes useless.

Operating with limited resources forces you to gain confidence and rely on your own skillset and knowledge. Like a reef knot; the more stress placed, the stronger it becomes. I really didn’t appreciate the knowledge and skills I had till they were put to the test.

I learnt to adapt with the limited resources I had. Gloves as tourniquets, the jacket off my back to tilt major blood vessels off pregnant bellies, paediatric masks on large adults and securing cannula’s with whatever was available. You adapt and utilise every bit of equipment like it’s the last coffee bean at an ambulance station.

**El.** Some of the clinical challenges included a lack of resources, low stock levels, and equipment failures both in the pre-hospital setting and in the hospital setting. It makes you really think outside the box and utilize only what you need and save what you can where you can.

*I note that there has been a cyclone watch recently, has this impacted your ability to deliver prehospital care?*

**Liv.** The frequent cyclones and remoteness of the islands create large challenges for Ni-Vanuatu’s (locals) to access healthcare. Patients on the outskirts of Santo or nearby islands can travel 8 hours via boat to arrive at a safe rendezvous point with the ambulance. This access is frequently interrupted by poor travel conditions, such as rain or cyclones. An unfortunate patient’s boat had to be turned around due to poor weather due to a nearby cyclone. No further call out was requested, with a likely poor outcome as an explanation.



**El.** Due to the rain, the roads were damaged and flooded which made it impossible to get to some of the remote health clinics in the north and south. I believe it also affected the phone reception and patients were unable to contact us for help.

*What do you miss most about home?*

**Liv.** Roadworks. This is no exaggeration, but I finally appreciate those long stretches of ghastly slow roads. Maintenance is difficult and the result are some large pot holes battered along the road like a chickenpox outbreak. There is a village far East, called Tasiriki, which takes 3 hours of intense 4x4 driving. The skills the local student paramedics have in driving this route could win them some championships around the world. (Yes, apparently 4WD races are thing. Maybe competitors should just come to volunteer in Santo!) Jokes aside, the terrible terrain compromises healthcare to a shocking extent. We transported a patient in premature labour for 4 hours across this terrible terrain, having to stop for every assessment and intervention. But fast enough to beat the rain which would have flooded the roads, leaving us stranded in the middle of nowhere with no reception and a 32-week gestation newborn requiring intensive care.

**El.** To be honest I didn’t really miss much about home. I really enjoyed my time in Vanuatu, the people and the surroundings where lovely and I felt at home. The town of Luganville reminds me of a small country town in Australia and it had all the necessities to live comfortably for the month.

*If you had an opportunity to describe one experience here on Santo what would that be and why?*

**Liv.** During my time in Santo, myself and my colleagues responded to many sick patients. Although interesting, and maybe a binge worthy Netflix series in itself, the experience I want to describe isn’t those. What I found quite fascinating was black magic. I had heard the term, but my mind reverted to Voo-doo dolls rather than any realistic traditions.

Often patients we visited had first visited their local “healer” in western terms. They receive a multitude of treatments I’m sure scientists and medical professionals alike would have a field day speculating over. A Ni-Vanuatu pointed out leaves in the forest that were burnt and applied to fractures





for analgesia and realignment. There were other particular leaves that are chewed by the healer and spat into open wounds to keep the evil out. In many patients you could find chewed up grass in wounds or patients lathered in salt. One shift, I was warned by my colleague to watch out for flying leafy spit balls whilst cannulating as I was introducing an open wound therefore a path to evil to enter. I never thought I'd be looking out for flying spitballs when checking for dangers in my primary survey.

**El.** Local Ni-Vanuatu Paramedic Pascal took a call about a lady in Big Bay who had apparently amputated her hand. With limited information provided he instructed them to place a tourniquet on to stop the bleeding. It took a very bumpy 2 hour drive to reach the patient during which time a local who was with the patient rang us every 30 minutes to get an update on our location.

On arrival there were over 30 people surrounding the patient. Two ladies were fanning her with traditional woven fans and another lady on each side of her, holding her arms and trying to comfort her. She was screaming in agony.

At first, it looked as if there was a lot of damage but as we got closer we could see that the hand/wrist/arm was still intact and she had a big laceration across the base of her left thumb extending over the dorsal side of her hand and down toward her wrist. She had a piece of cloth tied tight around her wrist and her upper arm as a tourniquet. We removed the cloth from the upper arm.

After failed cannulation, Pascal performed a block around her wrist and the wound, which immediately relieved her pain. We washed the wound as best we could and applied a pressure dressing, splint and bandages.

During the bumpy ride to hospital, she was comfortable with only a small amount of pain relief for the first 30 minutes, however her pain increased from the rough ride. During transport she was stable until hospital where she became bradycardic and hypotensive. At the hospital Pascal and I were required to further assist the doctor assess and stabilise the wound. When asked about how the injury occurred, the patient recalled she was outside in the garden and attempted to smack her child. Her child ran behind her grandmother who was holding a big bush knife and when she went to smack her child her hand hit the knife accidentally. Whoops!

*If you could share a dinner with two people who have inspired you, who would it be and why?*

**Liv.** The first person I would choose is a special lady known as the Santo branch Mumma. The other paramedic volunteers and I were lucky enough to have been invited to her home for a traditional dinner. She has lived tough, and despite her limited resources brings so much joy and happiness to her community. Only two years ago she could afford to connect electricity to her house. This meant her children could finish their homework at night. Despite this, she still opens her doors to multiple young children with no roof over their head.

The second person includes many. All of the inspiring nurses, midwives and doctors working on the remote locations dotted throughout Vanuatu. Witnessing the efforts of nurses and midwives on outer islands, where they are the only healthcare professional isolated by hours of tough terrain or boat rides. I would love to travel to the incredibly diverse and isolated places to spend the night with these incredible people. Hopefully someday I will!

**El.** I would choose two people that I met in Vanuatu. The first one is Temox, a nurse from the Solomon Islands who works in a very remote village on Santo. There is no road access therefore if a patient needs to be admitted to the Northern Provincial Hospital in Luganville, they have to



walk four hours to catch the boat and then endure an eight hour boat ride to Matantas. Here the ambulance is able to access the boat at a beach and then the ambulance has a two hour drive back to the Hospital with half of the drive being off road. Temox is the only health professional working in the clinic and basically has to do everything a doctor would normally do under guidance. I take my hat off to Temox living in such a remote village and having such a large responsibility with no back up!

The second would be Ryan, a doctor working in the four bed emergency department at the Northern Provincial Hospital in Luganville. He is a Ni-Vanuatu that studied his medical degree in Havana, Cuba. Although I didn't get to see much of what Dr Ryan did in the emergency department, I feel that it would be very interesting to sit down and talk about the large variety of interesting cases he sees on a daily basis.

For me, I find I love listening to experiences and all the cool stuff other people have seen and done in the hope that one day I will have my own cool stories to share.

*What are some things you hope to achieve / personal goals in paramedicine in the next couple of years?*

**Liv.** I have already signed up to provide more volunteer aid in other countries. I have a long term goal to work as many projects as possible. I look forward to learning more and

doing what I can to bridge gaps in healthcare around the world.

**El.** I hope to gain experience in all aspects of paramedicine and the health industry. I would love to volunteer more in different countries and help those in need.

When people think of the Pacific islands, they often think of palm trees, white beaches and relaxation. Others think of community work and ambulance.

We thank Elise and Olivia for their time today and we equally we thank them for their ongoing service to the global community.

Anyone keen to know more check out:

[www.planetmedic.com.au](http://www.planetmedic.com.au).



# The Paramedic Observer

## Contributing Writers Wanted

Do you feel you have something to share with Paramedics across Australia?  
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### Detecting OHCA using Artificial Intelligence

5th February 2020

RECENT posts in the Paramedic Observer have placed a focus on out-of-hospital cardiac arrest (OHCA) as various OHCA annual reports have been released - for example, London <https://bit.ly/2RZMC1g>, Victoria <https://bit.ly/2Opo13w> and even ROGS <https://bit.ly/2Oshqp5>

The European Emergency Number Association (EENA) in association with Artificial Intelligence (AI) company Corti in January 2020 published a report on the pilot project to assess how AI can work alongside emergency call takers to improve emergency response.

AI has the potential to transform the way emergency calls are handled by providing real-time, innovative decision support to improve the quality of live detections during calls. By working alongside call handlers and dispatchers, AI could spot patterns which would be very difficult for humans and could identify cases of cardiac arrest more quickly and more accurately. Results to date have been promising.

The project report is here: <https://bit.ly/2vS4LFH>

Closer to home, the Victorian government has announced (2 February) that it will contribute AU\$1.36 million towards the Artificial Intelligence in Cardiac Arrest project, which will be developed by Monash University and Ambulance Victoria.

"The AI technology runs in the background of incoming emergency calls and picks up keywords, language, and sound patterns of the caller that are likely to indicate the patient is having a cardiac arrest," the government said.

Read more about the Victorian project here: <https://zd.net/380sOaf> and <https://bit.ly/398dNwy>



### New Zealand Paramedic Council

3rd February 2020

PARAMEDICS in New Zealand (NZ) are to be nationally regulated under the Health Practitioners Competence Assurance Act 2003 by an independent Paramedic Council. <https://bit.ly/2Scgs1j>

The Paramedic Regulatory Advisory Workgroup has been established to help pave the way, and an information website is being developed to keep stakeholders informed of progress. <https://paramediccouncil.org.nz>

The Ministry of Health has advertised for nominations and expressions of interest for paramedic (health practitioner) members and layperson members to be appointed to the inaugural Board of the New Zealand Paramedic Council.

Position details are here:

<https://careers.health.govt.nz/jobs/MOH-1446199>

In addition, more details about the governance arrangements and appointments to the Paramedic Council have been added to the webpage: <https://bit.ly/2SiPF3c>

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Improved OHCA outcomes reported by London Ambulance Service

31st January 2020

THE 2018/19 Cardiac Arrest Annual Report published by London Ambulance Service shows people surviving an out of hospital cardiac arrest (OHCA) has reached 10.8 per cent, twice the rate it was a decade ago.

When a Public Access Defibrillator (PAD) was used by a member of the public and at least one shock was delivered to patients, the survival rate was more than five times higher (57.1 per cent).

The service has renewed calls for people to get life-saving training in cardio-pulmonary resuscitation (CPR) and how to use a defibrillator. However, even those who have not been trained should still use a PAD if there is one available.

With around 70% of cardiac arrests taking place in the home and half being witnessed by a bystander, quick intervention could mean the difference between life and death for a family member or a friend.

Chief Medical Officer at London Ambulance Service, Dr Fenella Wrigley said: "The key to a patient surviving a cardiac arrest is for them to receive basic life support as quickly as possible, including chest compressions and the use of a defibrillator."

"I also really want to emphasise that members of the public can never do a patient any harm by using a defibrillator – it simply assesses the patient's heart rhythm and will only deliver a shock if it is needed. When you use a defibrillator, you are only ever improving that person's chances of survival."

Access the London OHCA report here: <https://bit.ly/36JZtsq>

London Ambulance Service media; <https://bit.ly/2U9RWax>

CSA Technical Committee on Fatigue Risk Management

26th January 2020

THE EMS industry has a fatigue problem, yet few have developed solutions informed by the evidence or best practice. This situation has been raised by the Observer



on several occasions viz: <https://bit.ly/2Grbsk2>

The Observer opines that fatigue risk management needs to be part of the organisational safety culture, and paramedics should not face consequences for highlighting risks to safety because of fatigue.

In Canada, the CSA Group has announced the launch of a project to develop an evidence-informed new National Standard on First Responder Fatigue Risk Management as well as supporting implementation tools.

The objective is to provide an innovative approach for first responder organisations to systematically prevent and manage workplace fatigue, by addressing it in a strategic, coordinated approach, and as part of a broad organisational management framework.

The intent is to consider all forms of fatigue, including cognitive fatigue, physical fatigue, perceptual fatigue, emotional fatigue, and burnout.

Project partners are Canadian Institute for Safety, Wellness and Performance at Conestoga College Institute of Technology & Advanced Learning, County of Renfrew Paramedic Service, Paramedic Association of Canada, Paramedic Chiefs of Canada, WorkSafeBC and CSA Group.

To undertake this work, a new Technical Committee is being established and interested stakeholders with related knowledge and expertise are sought, who will actively participate and contribute to the development of this important new Standard. <https://bit.ly/310L6i7>

AHPRA issues two policy directives

23rd January 2020

THE COAG Health Council has resolved to issue two policy directives to make it clear that when administering the National scheme, public protection is paramount and to require consultation with patient safety bodies and health care consumer bodies on every new and revised registration standard, code and guidelines.

Policy Direction 2019-01 - Paramountcy of public protection when administering the National Scheme

Policy Direction 2019-02 - Requirements to consult with patient safety bodies and health care consumer bodies on every new and revised registration standard, code and guidelines

Directives link: <https://bit.ly/2NSbaXi>

Read directives as a flipbook: <https://bit.ly/2NSsFGX>



OHCA Survival Trends in Queensland, Australia

9th January 2020

PUBLISHED in December 2018, the Queensland Ambulance Service (QAS) publication Survival Trends: Out of Hospital Cardiac Arrest (OHCA) in Queensland 2000-2016 is a very readable summary of patient survival over an extended 17 year reporting period during which QAS attended 69,338 OHCA cases. <https://bit.ly/2T3GCFp>

What might be of interest to readers from other jurisdictions in places like the UK, Europe, USA and Canada is not only the OHCA performance but also that the Queensland service (like other Australian services) operates over a vast

geographical area and serves populations ranging from metropolitan to extremely remote settings (<1 persons/km2). <https://bit.ly/2Fwo7Bx>

The report also contains a brief but useful background to the history and scope of the QAS. From a policy perspective, the Observer is a firm believer in the benefits of a publicly-funded and coordinated out-of-hospital emergency and community health service which has the resources to provide access to care to all those in need across our far-flung communities. It's a challenge faced in many jurisdictions <https://bit.ly/39RpI32> and <https://bit.ly/2t2DgI6>

Survival Trends is an interesting read that underscores the principles embodied in the Chain of Survival, which is now a globally recognised concept that refers to key actions that underpin OHCA resuscitation efforts.

These involve early access, early CPR, early defibrillation, and early advanced life support. More recently, a fifth link – integrated post-cardiac arrest care – has been added. The fifth link has been shown to significantly improve survival and neurological outcomes in post-ROSC OHCA patients.

When these links are optimised, together they maximise the likelihood of survival from OHCA. The QAS plays a role in supporting every component of the Chain of Survival, underpinning the importance of continually enhancing operational and clinical practice.

For other related QAS research reports see:

QAS STEMI Report 2008-2918: <https://bit.ly/2tDYLPa>

OHCA Annual Report 2017 <https://bit.ly/2N8IMkK>



# Are your eating habits up to scratch?

Why meal planning is the key to good health for shift workers

WE DON'T need to tell you how shift work, along with the demands of a paramedic job, affects your eating habits. Unfortunately, it's typically not in a good way.

If you are like most, you have probably skipped meals, eaten irregularly and often chosen the easy but unhealthy option. It's well known that these habits can lead to weight gain, feeling under par and sometimes niggly little health complaints. Over time, poor eating habits can do even more harm, leaving you susceptible to all sorts of chronic health conditions.

Finding your rhythm with diet when you are a shift worker will not only make you feel healthier and more energetic. It will also support better sleep and stress management, as well as having a positive impact on mindset and mental health. And the easiest way to develop that healthy eating regime... is meal planning.

### How meal planning makes you healthier

Unfortunately meal planning isn't a sexy thing. In fact, it sounds downright boring. But please, stay with us here as we show you the immense benefits of investing a few minutes a week in being more organised with your food routine.

Meal planning will:

- ✓ Put you in more control – this is especially important if you're trying to manage your weight or optimise your day-to-day performance.

✓ Ensure you eat better – as your meal blueprint is set and your fridge is filled accordingly.

✓ Reduce opportunities for poor choices – such as last minute take-away or unhealthy snacks.

✓ Reduce your stress – as food becomes one less thing to worry about.

✓ Save you time and money – as you shop once for the week and buy only what you need.

✓ Ensure you eat more variety – as you've planned it that way.

Reduce waste – as you buy only what you need and eat what you buy.

Studies show that meal planning is associated with healthier eating and less obesity. And before you object by saying it takes too much time or effort, let us tell you that all it takes is a few minutes a week. Work out what shifts you're on, any other commitments you have, jot down the meals or snacks you plan to cook or buy, slot them on the weekly grid, then generate a shopping list. You can go online for simple or fancy meal planning templates or just pop your handwritten meal schedule on the fridge.

### Making shift work, work for you. 4 Steps to successful meal planning

The one unique advantage that shift workers have over everyone else is that your free time can be at odd times. You just need to work out how you can exploit that. Perhaps it's shopping at quiet times, picking up end of day specials at the supermarket or green grocer, or having the kitchen to

yourself to do some batch cooking/weekly meal prepping with no interruptions.

**Step 1 – Your thinking is everything – have a healthy mindset.** Approach each day with positivity and make every meal choice a healthy one - it's that easy. Think about your end goals, be it weight loss, overcoming health challenges or feeling better about yourself. A good place to start is understanding how many calories you want to consume daily and become aware of any unhealthy food that can have healthy swaps. For example, choose a piece of fruit over fruit juice, swap white bread for wholegrain, battered fish for grilled fish or baked potato for French fries. Over time, making these simple healthier choices will become your go-to.

**Step 2 – You are what you eat – look at the type of food + portion sizes.**

Key points here are to opt for unprocessed, wholefoods where possible. Limit take-always and processed foods that tend to be loaded with sugar, salt, fat and additives. Drink plenty of water. Limit alcohol intake. Aim for sensible portions and listen to your body for hunger and fullness cues.

Get to know your daily dietary recommendations. In a nutshell per day, you should be eating 5 serves of vegetables, 2 serves of fruit, 2-3 serves of protein (such as meat, eggs, lentils, tofu, beans and nuts), 4-6 serves of healthy carbs (such as wholegrain bread, brown rice, quinoa, oats), 2-4 serves of dairy or plant-alternatives.

**Step 3 – Be realistic – work within your capabilities.** If you're not a natural cook, don't overcommit yourself to prepping elaborate meals or home-made everything, as you won't stick to it. Simple and quick meals using fresh ingredients can be easy and effective staples of your eating plan. Highly nutritious examples include a can of tuna over salad leaves, mushroom and cheese omelette, or baked beans on wholegrain toast. For snacks, you can reach for a piece of fruit, tub of yoghurt, handful of nuts or vege sticks.

Dinner

Beef + Snow Pea Stir fry

Serves: 1

Prep: 10 -15 minutes

Cook: 5 minutes

Method

Stir fry in the usual way. Please note the beef will cook quicker than the broccoli and capsicum so stir fry ingredients in order of cooking time, tossing in the seasonings just before the end of cooking.

Gluten Free Option: Use Gluten Free Soy Sauce or Tamari

Vegetarian Option: Replace beef with 200g tofu

Ingredients

120g rump steak, thinly sliced

1/2 tbsp. grated ginger

Handful snow peas

1/2 small chilli, chopped

1/8 red capsicum, sliced

1 tbsp. soy sauce

1/2 small head broccoli, florets

2 tsp sesame oil

1/3 cup cooked brown rice or quinoa

1/2 tbsp. hoi sin or rice wine vinegar

1 tsp. honey

PER SERVE

Calories: 396

Carbs: 26g

Fat: 19.5g

Protein: 32g

(GF) (V)

PER SERVE

Calories: 393

Carbs: 26g

Fat: 20g

Protein: 33g

**Step 4 – Mix it up – variety is the spice of life.** Studies now show that greater variety in what you eat translates to better gut health (as different foods generate a more diverse microbiome). A good way to get more variety is to branch out with a blend of at-home cooking and healthy pre-made meals from heathy meal makers Dietlicious. Choose meals that are a departure from what you'd create yourself.

### 3 Top Tips for eating well + saving time

**1. Reuse your meal plans** – store them to use again, with or without tweaks.

**2. Learn batch cooking** – cook double portions and take to work for lunch/dinner the next day, or freeze for future use.

**3. Incorporate some convenience** – life's a little easier if you don't always have to do everything from scratch. That's where Dietlicious meals can come in. Have some on standby in the freezer so you can serve up quickly and still eat well. Dietlicious have over 100 meals suitable for men and women.

When you're too busy to cook, you can choose a matched meal from Dietlicious such as our Asian Beef Stir Fry with Healthy Fried Rice to replace the dinner above. The beauty of Dietlicious meals is that they are super healthy, portion sized and calorie controlled. Plus, store in the freezer and heat to serve in under 10 minutes!

1 Day Meal Plan

Breakfast	Avocado, Tomato + Feta Toast
Lunch	Pesto, Sweet Potato + Egg Salad
Dinner	Beef + Snow Pea Stir Fry

DIETLICIOUS

www.dietlicious.com.au

Dietlicious want to support you get some healthy meals on standby in the freezer. Check out our special offer to **GET \$20 OFF\* + go into the draw to WIN** a signed copy of Zoe Bingley-Pullin's cookbook Falling in Love with Food.



## Make shift work – work for you!

GET \$20 Off Australia's healthiest home delivered meals



Eat better, save time and feel great in 2020  
Fill up your freezer with ready-made,  
chef prepared 100% healthy meals  
No preservatives + No additives  
No contracts!



JOIN



ORDER



DELIVERED TO  
YOUR DOOR



HEAT AND ENJOY

As regular contributors to AusParamedic, we are as passionate about supporting our Paramedics to eat well and feel great in 2020.

You spend every day saving lives, working shift work and might not always want to come home and cook. We know how easy it is to go for the 'easy' option meal when you are tired.

That's where Australia's best home delivery meal company is here to offer you something special.

**GET \$20 Off!\*** Just use the CODE 'AUS20' to automatically go into the Draw to WIN a signed Copy of nutritionist, Zoe Bingley-Pullin's cookbook 'Falling in Love with Food'.

Australian made and owned we are loved by health nuts, foodies and the time poor. Dietlicious meals are lovingly created by a team of passionate chefs who cook using only 100% fresh ingredients. And as we cook fresh then snap freeze we are using nature's preservative 'freezing' to lock in maximum taste and flavour which means we use No preservatives and No additives in anything – just fresh, natural ingredients to create great tasting meals for your enjoyment.

Established in 2010, our sister company is Gourmet Dinner Service which was established in 1994, so we know a thing or two about cooking ready to eat meals full of flavour and taste

with plenty of variety. Select from over 100 meals, plus a huge range of snacks and smoothies to choose from.

Designed by dietitians and approved by expert Nutritionist, Zoe Bingley-Pullin, our meals are nutritionally balanced with the highest proportion of real quality protein, portion and calorie controlled.

We deliver to your door across NSW, QLD, VIC, ACT and SA – just check your post code to search delivery in your area.

### OUR MOST POPULAR MEALS

With over 40 plans, 12 Lunch & Dinner Packs, 9 Food Cleanses plus a 4 Week Body Reset Program that comes with meal plans, recipes and 20 meals and 20 snacks to keep you on track and succeed.



**Breakfast – Try our 100% natural smoothies – Coffee Smoothie**



**Lunch – They say it's better than Mum's cooking – Spaghetti Bolognese**



**Salads – Spicy Chicken and Couscous salad**



**Dinner – Kashmiri Lamb Curry**

**Snacks – you have never tried hand-made raw snacks like these!**



### WE CATER FOR ALL DIETARY NEEDS

It's easy to filter out the meals you are looking for, simply select any of our 8 filters when placing your order.

### OUR AUSPARAMEDIC SPECIAL OFFER:

Get \$20 OFF!\*

**USE CODE:** AUS20

**WIN:** All orders go into the draw to WIN Zoe's cookbook – Falling in Love with Food as a special give away to one person who orders using our CODE.



Australian  
Owned



Environmentally  
Committed



Ingredient  
Integrity



Flavour  
Diversity



Gluten Free



Dairy Free



Vegetarian



Vegan



Requires Cooking



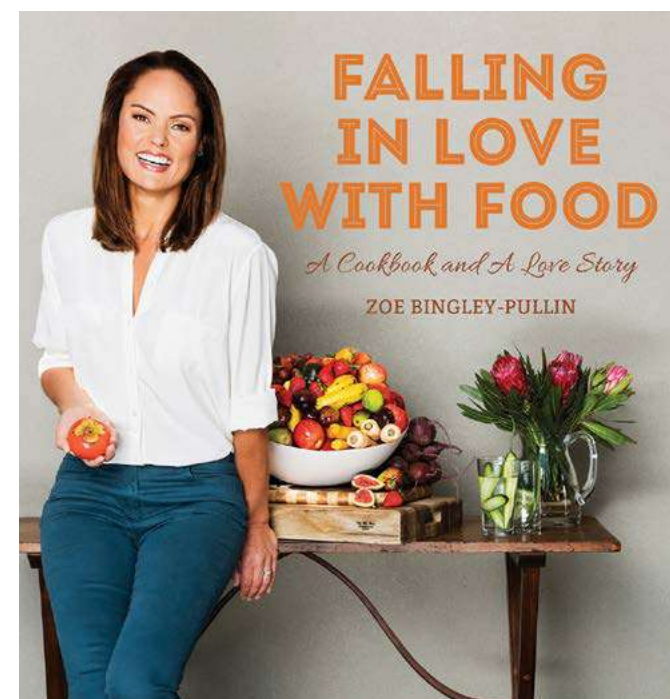
Coriander Free



Capsicum Free



Nut Free



### \*TERMS AND CONDITIONS

• **AUS20 Discount Code:** This is a multi-use discount code to get \$20 OFF meal costs (excluding delivery) • Minimum Spend \$100 (excluding delivery) for the AUS20 code to apply • Insert AUS20 code in promotional code section on checkout • Expiry date: August 2020 • Subject to available delivery areas across NSW, QLD, VIC, ACT and SA (search post code to confirm delivery) • One account per customer • One discount code per order • Accounts are automatically subscribed to a weekly newsletter, with other weekly offers and discounts • You may opt to use any weekly newsletter offers instead of the AUS20 discount code • You may opt out of receiving weekly newsletters at any time • Not redeemable for cash • Does not apply to Gift Vouchers

### CONTACT US - CUSTOMER SERVICE

Phone: 1300 131 070

Email: [info@dietlicious.com.au](mailto:info@dietlicious.com.au)

### CUSTOMER SERVICE HOURS:

Monday to Thursday: 7.30am – 5.00pm

Friday: 7.30am – 4.00pm (QLD closes 12noon Fridays)



# FOAMed HIGHLIGHTS



## Rebellion in EM 2019: Resuscitative Hysterotomy via Jaime Hope, MD

Written by Salim Rezaie REBEL Crit

The perimortem cesarean section, or better named the resuscitative hysterotomy, is a procedure that is performed at or near death of a pregnant patient. Most experts agree that this procedure should be performed in a maternal arrest with a pregnancy  $\geq 24$  weeks of gestation. Although there is no real data regarding the optimal time to delivery post-arrest, survival drastically decreases when the time from maternal death to delivery reaches 5 minutes (ie. Therefore a 4 minute rule has become standard). In this talk from Rebellion in EM 2019, Dr. Jaime Hope, MD walks us through the steps of performing this stressful procedure.

View the talk at this link: [https://youtu.be/KC\\_P6h\\_xoOY](https://youtu.be/KC_P6h_xoOY)

## Extending Systemic Thrombolysis to 4.5 – 9 Hours and Wake-Up Strokes Using Perfusion Imaging: A Meta-Analysis

Written by Mark Ramzy REBEL EM

**Background Information:** The administration of alteplase (tPA) in acute ischemic stroke (AIS) continues to remain a highly debated topic. As hospital systems continue to undergo major changes to facilitate this controversial drug's administration, more studies are coming out focusing on neuroimaging and how it plays a role in the time window of AIS. The WAKE-UP trial was one of the first studies to identify MRI patterns suggestive of a stroke in patient whose onset time was unknown.<sup>1,2</sup> Over the past 10+ years, other studies have also attempted to identify the role of advanced neuroimaging guiding tPA administration for improved functional outcomes. The authors conducted a meta-analysis to test the hypothesis that tPA improves functional outcomes compared with placebo 4.5 – 9 hours after onset in AIS patients who received advanced neuroimaging.

The full review is available here: <https://rebelem.com/extending-systemic-thrombolysis-to-4-5-9-hours-and-wake-up-strokes-using-perfusion-imaging-a-meta-analysis/>



## Hot Garbage: Mythbusting fever in children

Alasdair Munro

Munro, A. Hot Garbage: Mythbusting fever in children, Don't Forget the Bubbles, 2020. Available at:

<http://doi.org/10.31440/DFTB.22916>

Febrile illnesses are the most common cause of presentation to acute paediatric medical services. This means that fever is the most common presenting symptom seen by paediatricians, and it is clearly a huge cause of concern for parents. Despite this fact, it is clear that in day-to-day practice that there is a widespread misunderstanding about fever, its purpose, and its clinical interpretation.

Well, no longer! Once you have finished reading, you will be a master of all things related to fevers in children. We will start with some basic understanding of the processes surrounding fever, and finish off with some mega myth-busting!

Read the article here: <http://doi.org/10.31440/DFTB.22916>

## ECG Case 118

by Dr John Larkin, last update June 25, 2019

This ECG is from a 35yr old male Type 1 diabetic. He presents feeling generally unwell with abdominal pain and dyspnea.



Read the discussion on this ECG and the clinical outcome at *Life in the Fast Lane* <https://litfl.com/ecg-case-118/>



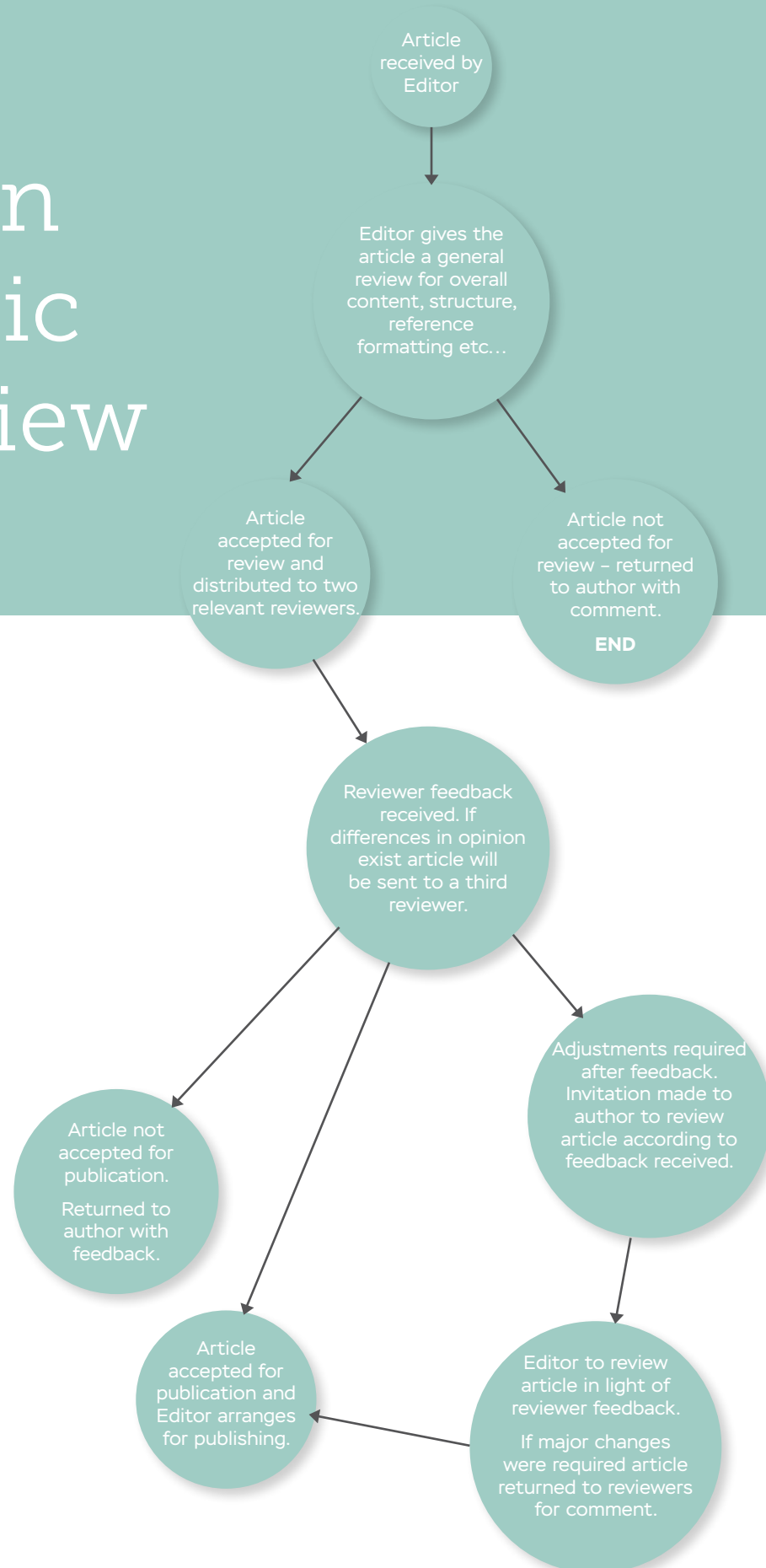
# Australian Paramedic Peer Review Process

Commencing in this edition of Australian Paramedic we will be introducing a peer reviewed process for clinical articles. These articles will undergo a single-blind review process (reviewer detail will not be made available to authors), where two reviewers with relevant experience and knowledge will provide a review of articles. The process we will be following is as per the diagram on the right.

You may ask why we would want to introduce this process; the primary reason for peer review is to ensure the accuracy of information that is published and provide validity to our articles. In this way, articles that are marked in our journal as peer review you can be sure are providing relevant and accurate information on the topic discussion.

**Keep an eye out for papers marked with the 'PR' stamp and red ribbon!**

## HOW IT WORKS



## Writing an article for Australian Paramedic

*Australian Paramedic welcomes articles from paramedics across Australia and internationally – you too can become a part of this exciting new journal!*

### We welcome articles on any of the following:

- Clinical review, report or discussion;
  - Case study;
- Management in emergency medical services;
  - Occupational health and safety;
  - Opinion pieces;
- General health, psychology or law relevant to emergency medical services;
- Any other article or knowledge that you would like to share that is relevant to the Australian Paramedic.

Lead authors of published articles will be paid for their submission. Payment amount will vary depending on type of article, length, and inclusion of images. Payment will also be considered for submission of images, independent of any article, but it is up to the photographer to ensure that all relevant permissions are sought.

### Getting published in Australian Paramedic

#### DO YOUR HOMEWORK

The key to having your article published is to do your homework first, and ensure your writing is targeted to our journal. Knowing the target audience is imperative, and an essential first step. For us, we are looking for articles with good content and information relevant to paramedics in Australia.

This does not mean we will limit our information only to Australian content... far from it. There is also a lot to learn from methods and processes used internationally, and we will endeavour to include such information in our journal too. What we do want is current information that provides updates relevant to emergency medical care.

#### DISCUSS WITH THE EDITOR

Discussing ideas and proposals with the Editor can be a great way to ensure that you do not waste your time. Our Editor is very happy to receive enquiries and provide advice on an approach for an article or identifying areas of key interest for our journal. All you have to do is drop a line or two to [amy@ausparamedic.com.au](mailto:amy@ausparamedic.com.au)

#### GRAB THE READER'S ATTENTION

It is essential to grab the attention of the reader in the first paragraph of the article – by providing a catchy phrase, or simply giving an interesting snippet of what your article will be talking about. After that, good flow, grammar and punctuation is essential as well, to keep our readers engaged.

#### PROVIDE SOME GREAT PHOTOS

Photos also are a great way to grab attention, and they make up a crucial part of articles in our journal. Photos can be submitted as separate files, with ideally a resolution of at least 300dpi. However, it is up to you to ensure you have the permission of people appearing in the photo for publication.



[illegible]