



- Novel approaches to point of injury case utilising robotic and autonomous systems
- Principles and applications of Military leadership to improve civilian Trauma Medicine training
- Dual Loyalty and the Medical Profession for Australian Defence Force Medical Officers
- 2022 AMMA Conference Abstracts

The Journal of the Australasian Military Medicine Association





Medical and Military History in South Africa

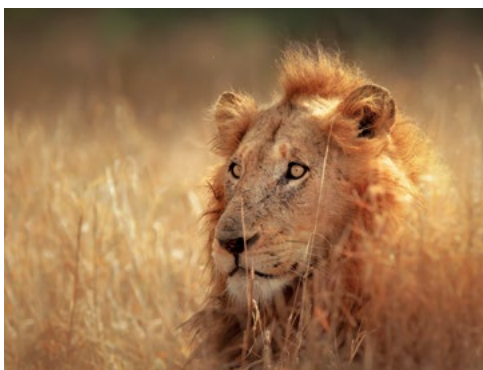
16 – 30 Jan 2023

3 nights Johannesburg – 3 nights Kruger National Park – 2 nights Eswatini – 2 nights Ladysmith – 4 nights Cape Town

This tour takes you on a personal and historical journey through South Africa, revealing its medical, military and cultural history, as well as many faces of this beautiful and diverse land.



Visit Adler Medical Museum, renowned and historic Groote Schuur Hospital, the Siege Museum in the historic town of Ladysmith and explore the battlefields of the Anglo-Zulu and Boer Wars.



Spot the 'Big Five' on game drives in Kruger Park and Milwane, take the spectacular Panorama Route, stay in Swazi 'beehive' huts and explore the famous Stellenbosch wine region with tastings.



Experienced Australian tour leader Dr Paul Luckin and national guide Frank Mbete led the previous tour together; they both worked in South Africa during apartheid and provide rare personal insights into this period.

Book or find out more at:

Email: info@jonbainestours.com.au • Tel: 03 9343 6367

www.jonbainestours.com/military

Table of Contents

Editorial

..... 5

Original Articles

Novel Approaches to Point of Injury Case Utilising Robotic and Autonomous Systems 6

Principles and Applications of Military Leadership to
Improve Civilian Trauma Medicine Training 11

Examining Clinical Presentation and Workup of Veterans
with Irritable Bowel Syndrome in a Single Medical Center: A Case Series 21

Dual Loyalty and the Medical Profession for Australian Defence Force Medical Officers 26

2022 AMMA Conference

Abstracts 31

Posters 78

Front Cover: Royal Australian Navy Medical School. Royal Australian Navy nursing officer Lieutenant Commander Wendy Snape and Leading Seaman Medic Andrew Wishard (right) perform patient-care during a collective training simulation activity at HMAS Penguin in Sydney.

Photo Credit: Department of Defence; photographer, LLSIS Matthew Lyall

Journal of Military and Veterans' Health

EDITORIAL BOARD

CDRE Andrew Robertson CSC, PSM (Editor in Chief, JMVH)

Associate Professor Martin Richardson (Deputy Editor)

Dr Robert Allen

Professor Martin Bricknell

Dr Daniel Chan

CDRE Michael Dowsett

Dr Helen Kelsall

Dr Jonathan Lane

COL Professor Peter Leggat, AM

Dr David Robertson

Air Commodore Rowan D Story AM, RFD (Retd)

Jason Watterson

Dr Kerri-Ann Woodbury

Australasian Military Medicine Association

PATRON

Rear Admiral Sarah Sharkey
Surgeon General Australian Defence Force
Commander Joint Health MBBS, MBA, MPP,
AFRACMA

COUNCIL

President	GPCAPT Geoff Robinson, NSC
Vice President	Dr Nader Abou-Seif
Secretary	Dr Janet Scott
Treasurer	CAPT Ian Young, AM
Journal Editor	Dr Andrew Robertson, CSC, PSM
Council Members	Dr Peter Hurly O.St.J., D.S.D., J.C.D. Dr Rachelle Bonner MAJ Brendan Wood C.St.J., DSD RNZAMC
Past President	Dr Greg Mahoney
Public Officer	Ms Paula Leishman

STATEMENT OF OBJECTIVES

The Australasian Military Medicine Association is an independent, professional scientific organisation of health professionals with the objectives of:

- Promoting the study of military medicine
- Bringing together those with an interest in military medicine
- Disseminating knowledge of military medicine
- Publishing and distributing a journal in military medicine
- Promoting research in military medicine

Membership of the Association is open to doctors, dentists, nurses, pharmacists, paramedics and anyone with a professional interest in any of the disciplines of military medicine. The Association is totally independent of the Australian Defence Force.

JMVH is published by the
Australasian Military Medicine Association
227 Collins Street Hobart Tas 7000 Australia
Ph: +61 3 62347844
Email: editorial@jmvh.org

Editorial

EIGHTY YEARS ON – EL ALAMEIN

For Australians serving in the Second World War, 1942 proved to be a turning point in many theatres. In North Africa, the first and second Battles of El Alamein between July and November 1942 prevented the Axis forces from advancing further into Egypt. The victory was the beginning of the end of the Western Desert Campaign and revived the morale of the Allied forces. Captain J.C. Bishop, RAMC, describes his experiences as a battle casualty after being bombed near El Alamein and losing his arm consequently. His description of his clinical treatment, including an amputation in the casualty clearing station, is sobering reading and provides some guidance on management of trauma victims that remains relevant today.

In addition to the Abstracts for the AMMA Conference, our fourth issue of 2022 contains a limited number of articles on a diverse range of topics from the use of robotic systems in injury care, the role of military leadership in improving civilian Trauma Medicine training, Irritable Bowel Syndrome, and dual loyalty and the medical profession for Australian Defence Force Medical Officers. We continue to attract a good range of articles, including from overseas, as is demonstrated in this issue with articles from Australia and the United States. Other military and veterans' health articles, however, are always very welcome, and we would encourage all our readers to consider writing on their areas of military or veterans' health interest. We would particularly welcome papers based on presentations given at or planned for our 2022 conferences, but welcome any articles across the broader spectrum of military health.

Dr Andy Robertson, CSC, PSM
Commodore, RAN
Editor-in-Chief

1. Bishop JC. Experiences of a Battle Casualty at El Alamein. BMJ Military Health. 1944 Mar 1;82(3):125-9. <https://militaryhealth.bmj.com/content/82/3/125.abstract>

Novel Approaches to Point of Injury Case Utilising Robotic and Autonomous Systems

C.H.C. Pilgrim, M Fitzgerald

Abstract

Army has developed a robotic and autonomous system (RAS) strategy (2018); however, health has yet to feature in this domain. Artificial intelligence can be used to augment surgical and resuscitative intervention on the battlefield utilising current heads-up display technology, aligning with three key strategic aims of the RAS document of 1) maximising soldier performance, 2) improving human decision making, and 3) protecting the fighting force.

Real-time monitoring of resuscitative efforts can minimise errors of omission and reduce preventable death rates on the battlefield. Integrating these systems into the receiving medical treatment facility can similarly augment readiness and minimise handover and delays in instituting life-saving interventions upon arrival at higher echelons of care.

Bandwidth and connectivity denial in the contested environment can be overcome by incorporating algorithmic decision support into the local user hardware so the system can function offline. Online access, when available, can link remote clinician resuscitation experts to integral medics providing care on scene.

Evacuation of casualties may also be enhanced using autonomous systems and crewless vehicles, potentially both airborne and ground-borne.

To be future-ready, Army must be able to rapidly adapt to changing battlefield circumstances. Relying on what has worked in the past risks being surpassed by novel approaches that supersede and out-manoeuvre contemporary fighting forces. This applies equally in military healthcare delivery as it does in combat units. Army must anticipate and embrace changes to gain and maintain an advantage in the future operating environment. As is laid out in Army's Robotic and Autonomous Systems (RAS) strategy (2018):

'Of particular importance will be considering the impact of systems that can improve the speed and accuracy of the human decision-making cycle.' (Chief of Army RM Burr)

Of the five fields described in the RAS document as areas in which Army will seek to gain advantage by harnessing technology, two are directly applicable to health service delivery. A third provides the same overarching theme as is fundamental to health—the function of health service delivery in protecting the fighting force. The other two comprise maximising soldier performance and improving decision making.

Real-time monitoring of resuscitation

Of direct applicability to health is the aim of maximising soldier performance by integrating fused sensors that intuitively present relevant patient physiological data aiding clinical decision making and thereby reducing the cognitive burden on combat medics (including combat first aiders [CFA] and medic health technicians [HLTH TECH]) delivering tactical combat casualty care (TCCC), particularly during the high-stress context of care under fire. Real-time clinical data on injured soldiers' vital parameters with prompts to suggest courses of action to treat

life-threatening injuries may be delivered to combat medics via heads-up displays (HUD) integrated into ballistic goggles.

These data may also be viewed by remote clinician resuscitation experts (CRE), who can provide live guidance and contribute to decision making in their relatively stress-free environment remote from the battlefield. However, this effect will be limited by network access, and in a contested or congested environment, provision must be made for complete disconnection from online communications. To counter this, protocols and guidelines can be built

into these sensor/information sources to aid and improve decision making offline and may be capable of predicting casualty deterioration faster than humans who may be preoccupied or distracted by other tasks as exist in the combat space.

A review of 4 596 battlefield fatalities found that 24.3% were potentially survivable.¹ Common causes of potentially survivable death include compressible haemorrhage, tension pneumothorax and airway compromise.² These areas present specific targets for remote damage control resuscitation.³ Uncontrolled haemorrhage was solely responsible for greater than 80% of US combat deaths during Operation Iraqi Freedom and Operation Enduring Freedom.² Life-Saving Intervention (LSI) errors of omission related to airway management, pleural decompression and hypotensive resuscitation are common.⁴ It is crucial that life-threatening conditions are recognised, and the LSIs are provided promptly to improve outcomes.⁵

Current TCCC guidelines involve sequential control of exsanguinating haemorrhage, managing airway and breathing, assessing haemorrhagic shock and dressing known wounds. Improved outcomes for casualty care due to these evidence-based guidelines have been demonstrated.⁶ In the initial care-under-fire phase, the care providers are capable of is limited. It is often not feasible to monitor a casualty while returning effective fire, as no means of remotely tracking vital signs of a casualty is currently available. Also, inherent in any resuscitation situation is the potential for error, which is a significant contributor to patient harm. Specifically, in a battlefield setting, the potential for error is increased due to the unique challenges of the austere environment, including care-under-fire scenarios, lack of medical resources, inadequate physiological monitoring capabilities and cognitive overload.

Remote monitoring of the combat casualty will allow the planning of timely casualty extrication. Continuous monitoring of vital signs will facilitate early recognition of deterioration in immediate post-injury period (historically the 'Golden Hour') while simultaneously reducing delays for timely field LSI. Improved casualty outcomes are achieved when proper and adequate LSIs are provided immediately, in contrast to delayed reception and resuscitation. Similar, integrated systems can be used to reduce reception and resuscitation errors in receiving medical treatment facilities (MTF).

Real-time monitoring of resuscitation efforts exists in civilian trauma management and is currently being tested and adjusted. These systems may be adapted to satisfy the parameters of improved decision making

and maximising soldier performance required in a military context. Technological solutions exist presently and are in the human-trial phase at civilian trauma centres in Australia. Results will be published regarding feasibility and effectiveness, hopefully within the next 12 to 18 months. Adapting and modifying the existing technology to suit a military combat scenario will require hardening vital structures and replacement of civilian with military equipment, such as substituting standard civilian splash-resistant protective eye shields with ballistic goggles, for example.

By harnessing these technologies, the Army health system may gain advantage in healthcare delivery and afford increased freedom of manoeuvre by spatially separating experts in trauma management from the practitioner delivering tasks under instruction. In essence, experts in trauma management can be brought to the casualty at the point of injury, essentially at the time of injury, minimising the time for expert medical advice with the ultimate goal of reducing death from preventable causes. The augmented reality provided by a HUD should enhance healthcare delivery while minimising the cognitive burden for the practitioner on scene. Augmentation of the objective force through the insertion of technology of this nature into current force structures leveraging existing CRE within Army aligns with broader RAS objectives and should be pursued in the healthcare sector.

Real-time monitoring of the broader status of a trauma incident

Beyond physiological monitoring of any single individual casualty, real-time battlefield data relevant to the overall trauma reception and management process that technological advancements may provide include: AME platform availability, number, current location and estimated time to destination; location, vital status and number of casualties en route, even details of ongoing enemy action in the area of interest. Clearly, this wealth of information comes at the cost of potential overload for an individual practitioner. Still, it would be of value to commanders (and specifically the J07) and those overseeing complex military operations.

Evacuation strategies

Novel alternatives to evacuation strategies are another area in which RAS may deliver Army advantage in the future operating environment. The RAS Joint Concept Note (2021) does not specifically address medical intervention, focusing initially on warehousing and distribution as key areas in which



Figure 1 – The BEAR battlefield casualty evacuation robot



Figure 2 – Ghost quadruped robotic dog

RAS may benefit. Equally, in healthcare, autonomous systems can improve survivability and reduce human risk when extracting casualties from the battlefield via crewless vehicles, in addition to reducing cognitive load in high-pressure environments of severe trauma management. Rapid evacuation and protection during transportation when injured on the battlefield are inherent in protecting the fighting force.

The current reliance on rotary-wing aeromedical evacuation (RWAME) may be challenged in a future contested airspace. Smaller footprint unmanned aerial vehicles (UAVs) have the additional beneficial qualities of reduced target acquisition area and reduced human casualty potential while maintaining the rapid extraction times achievable using the air route. Limitations arise regarding en-route care of critical patients. They may constrain the nature of appropriate casualty selection for UAV movement. Remote monitoring of casualty clinical condition will be mandatory in this context. Here again, contingency plans for degradation or denial of communications must be considered.

There are UAVs currently in service globally that fulfil the basic requirements making them possible candidates for casualty evacuation capability upgrades in terms of optimal size balancing airframe minimisation versus the ability to transport a casualty physically. Although usually intended for other purposes, mainly intelligence, surveillance and reconnaissance (ISR) roles, it would not be unreasonable to propose and consider structural component additions to the undercarriage to provide a hardened shell capable of housing a litter with attached remote monitoring devices to transport appropriate casualties in the future. Required minimal runway dimensions limit

the ability to land in the field to retrieve a casualty, but are of no relevance on returning to a role 2 (or 3) MTF if situated near an airfield, as is usually the case. Rotary-wing UAVs may overcome landing zone constraints in the future.

An overview of future battlefield medicine utilising robotic systems and crewless ground vehicles was published in the Australian literature 2014 in the *Journal of Military and Veterans Health*.⁷ Essentially, two functions can be provided remotely—extraction and/or treatment. First, and more realistically in the short to medium term, are robotic battlefield casualty extraction vehicles capable of retrieving and transporting injured soldiers over short distances to cover and concealment where TCCC may be effected more safely by human operators. The unique opportunity afforded by robotic extraction vehicles (REV) is this capacity to traverse terrain without cover and potentially in direct sight of otherwise lethal fire or danger where first responders cannot tactically move. This keeps responders out of danger and augments the capabilities of the human element.⁸

While theoretically very appealing, the practicalities of retrieving a potentially incapacitated or unconscious casualty pose real difficulties yet to be entirely overcome. For example, simpler REV solutions incorporating a sled dragged or towed by a generic robotic platform require the casualty to load themselves onto the sled and are therefore inherently limited. In contrast, more complex dedicated evacuation robots such as the BEAR (Figure 1), capable of loading the casualty robotically, still need to overcome and work around traumatic injuries (such as upper- or lower-limb amputations common in the improvised explosive device era). Additionally, while increased degrees of freedom of the robotic platform facilitate manoeuvrability, these

come at the significant cost of increased complexity of control. Finally, although tailor-made for picking up a human casualty, this robotic solution is specific to that one task, thus limiting its wider utility within Army.

Larger and more stable versions of existing land-based crewless vehicles, such as the Ghost Robotics quadruped robot (Figure 2), recently demonstrated at the Robotics Expo and Quantum technology challenge during the Chief of Army Symposium 2021, may potentially be fitted to achieve health effects of patient ground extraction capabilities in future iterations. Similar to the fit-out required to equip an UAV to transport a casualty, some form of hardened litter shell that could open along its length to receive and then close around a casualty for protection could be developed. This modular structure could be fitted to a generic robot dog in general service, temporarily repurposing it for casualty evacuation opportunistically. This structure is envisaged to be attached to the undercarriage of the torso of the robotic dog coupled with an internal four-pronged claw to slide under, lift and secure the casualty, simplifying patient loading and protection during transportation. The major attraction of options such as this is the multiple configurations of the robotic platform available, broadening the appeal of the associated capital expenditure that can deliver multiple effects on the battlefield. However, significant work would be required to develop a functional casualty loading device such as that postulated here. As it stands, the optimal robotic platform for casualty evacuation remains to be realised but remains a significant opportunity for robotics to influence healthcare delivery in the future operating environment.

Robotic platforms capable of delivering TCCC interventions are also being evaluated. However, these may be made redundant by REV, which can promptly transport a casualty back to a human operator.

Ideally, advanced REV should also be able to provide the receiving MTF with an enhanced report of incoming casualties by feeding live monitoring from evacuation platforms relaying integrated patient physiological sensor data. Based on this information, anticipation and preparation for necessary procedures can be planned with more clarity. In addition, they should improve casualty movement by directing or redirecting more or less acute cases to appropriate facilities where capacity exists. For example, deterioration indicating urgent neurosurgical intervention may redirect a casualty to a role 3 MTF from an initial role 2E destination.

Robotic/remote surgery

Further into the future, robotic surgery (which is of increasing interest in the civilian elective surgery setting) may yet be able to deliver remote surgery options in the forward environment. The civilian industry leader Intuitive with the Da Vinci system™ was initially developed with a military setting in mind with grant support from NASA and the US Defense Advanced Research Projects Agency but still requires a surgically skilled operator at the patient bedside. Additionally, the current infrastructure required to effect robotic surgery is incompatible with military deployment. The key benefit of a robotic platform of this nature is that, with sufficient bandwidth, a surgical procedure can be performed by any surgeon anywhere in the world utilising the robotic system once docked to the patient. Therefore, the bedside operator on deployment theoretically only requires the skillset to obtain access to the patient and to dock the robot, while more advanced surgical practitioners may be located anywhere in the world, well away from the battlefield and any threat. However, the biggest limitation to the further progression of remote robotic surgery in the military context is the time-critical nature of damage control trauma surgery. This requires maximal and rapid access to bodily cavities where torrential uncontrolled haemorrhage may occur, obscuring vision through anything other than a major incision, leaving no role for the minimally invasive approach. Therefore, robotic surgery is not appropriate for damage control trauma surgery.

Summary

Efficiency in trauma healthcare delivery may be obtained by embedding RAS in the pre-hospital setting in the contexts of immediate trauma resuscitation at the point of injury, and through enhanced patient evacuation. Trauma resuscitation may be optimised with a greater range of medical interventions delivered by practitioners augmented with HUD under instruction by CRE, backed up by algorithmic analysis of real-time alterations in physiology cueing medical intervention when necessary. Autonomous medical evacuation vehicles with a live feed of vital parameters to alert and prepare the receiving MTF should also improve patient outcomes, further minimising death and disability from trauma and is the future of healthcare in the autonomous systems age.

To paraphrase the Chief of Army, the increased use of RAS capabilities will fundamentally change the way Army delivers effects on the battlefield (including in the healthcare domain) by increasing situational awareness, reducing soldier cognitive

workload and increasing the reach and range of health service capabilities. Therefore, it should be prioritised to maintain a competitive advantage over our adversaries.

Disclaimer

The views presented here are those of the authors and do not represent the views of the Directorate of Army Health or the Australian Army.

*Corresponding Author: C.H.C. Pilgrim,
charlespilgrim@hotmail.com*

Authors: C.H.C. Pilgrim^{1,2} M Fitzgerald¹

Author Affiliations:

1 Alfred Hospital

*2 Monash University Faculty of Medicine Nursing
and Health Sciences*

References

1. Eastridge BJ, Mabry RL, Seguin P, Cantrell J, Tops T, Uribe P, et al. Death on the battlefield (2001-2011): Implications for the future of combat casualty care. *Journal of Trauma and Acute Care Surgery*. 2012;73(6):S431-S7.
2. Kelly JF, Ritenour AE, McLaughlin DF, Bagg KA, Apodaca AN, Mallak CT, et al. Injury severity and causes of death from Operation Iraqi Freedom and Operation Enduring Freedom: 2003-2004 versus 2006. *J Trauma*. 2008;64(2 Suppl):S21-6; discussion S6-7.
3. Hooper TJ, Nadler R, Badloe J, Butler FK, Glassberg E. Implementation and execution of military forward resuscitation programs. *Shock*. 2014;41(Suppl 1):90-7
4. Laird JR, Bebart VS, Burns CJ, Laird KF, Rasmussen TE, Renz EM, et al. Prehospital interventions performed in a combat zone: a prospective multicenter study of 1,003 combat wounded. *J Trauma Acute Care Surg*. 2012;73(2 Suppl 1):S38-42
5. Gerhardt RT, Adams BD, De Lorenzo RA, Godinez F, Crawford DM, Gruppo LG, et al. Panel Synopsis: Pre-Hospital Combat Health Support 2010: What Should Our Azimuth Be? *Journal of Trauma and Acute Care Surgery*. 2007;62(6):S15-S6
6. Kotwal RS, Montgomery HR, Kotwal BM, Champion HR, Butler FK, Jr., Mabry RL, et al. Eliminating preventable death on the battlefield. *Arch Surg*. 2011;146(12):1350-8
7. Martinic, G Glimpses of future battlefield medicine – the proliferation of robotic surgeons and unmanned vehicles and technologies. *J Mil Vet Health*, 2014;22(3).
8. Williams A, Sebastian B, Ben-Tzvi P, Review and analysis of search, extraction, evacuation and medical field treatment robots. *J Intell Robot Syst*. 2019;96:401-418

Principles and Applications of Military Leadership to Improve Civilian Trauma Medicine Training

P Sleeth, R Jithoo, C Potter

Abstract

This article examines how the principles and applications of military leadership improve civilian trauma medicine training. Military leaders have been pivotal in driving the development and improvement of a multidisciplinary trauma care course, the Definitive Perioperative Nurse Trauma Course (DPNTC). The development of the DPNTC has benefited from leadership principles underpinned by the experiences and unique skills that military health professionals gain through the shared military culture between care providers and care recipients.¹

The article will explore how a group of military leaders developed a targeted nursing curriculum within a multidisciplinary course, which suggests a way forward when developing further training for a multidisciplinary audience. From this experience, this article postulates that military leaders, principally military nurses, are well suited to roles in education and training, particularly when this involves learning across disparate groups and multidisciplinary training.²

Introduction

The purpose of the paper is to describe the development of the Definitive Perioperative Nurse Trauma Course (DPNTC) within the Definitive Surgical Trauma Course (DSTC). The development of the DPNTC has benefited from the leadership underpinned by the unique skills that military health professionals gain through their shared military culture.¹ Military health professionals impart their experiences within the DSTC to contribute to civilian trauma training and teamwork. Military health professionals work at the interface of multiple trauma management challenges, such as highly mobile frontlines, extended lines of logistics and complex evacuation chains.³ In the civilian setting, materials and resources are contrasted by supply chains that guarantee delivery in a reasonable timeframe. The experiences of military colleagues lend to what can be accomplished when materials are unavailable and what can be achieved with what is at hand and readily available, as military surgery operates within an echeloned system of care. The surgical team understands the environment and the limits of their contingencies.³ The military surgical

team, as opposed to their civilian counterparts, must alter their mindset to a staged approach to surgical care.³ The civilian and military systems commit to delivering trauma care aligned to the principles of the civilian trauma systems approach.³ The austere environments and multiple challenges faced by military surgical teams and guided by their leadership principles further contribute to civilian trauma training through their experiences in simulation. The DSTC develops acceptable means of identifying learning needs and promoting surgical training in trauma. A three-day high-fidelity training course for anaesthetists, perioperative nurses and surgeons focuses on the care of the critically ill patient suffering trauma, answering the question of what happens after advanced trauma life support (ATLS). While initially a course for surgeons, there has been recognition that successful trauma outcomes requires team training.

The International Association for Trauma Surgery and Intensive Care (IATSIC) members approved the DSTC curriculum during International Surgical Week held in Vienna in 1999.³ The DSTC would focus on lifesaving surgical techniques and

- 1 As Kee et al (2005, p. 1042) discussed, all nurses in the military are officers and military personnel in one hospital are likely to know personnel in another facility, which makes the military healthcare culture distinct from civilian settings. Findings from Kee et al. (2005) determined that there were differences in the professional environment of military nurses, compared to that of civilian nurses, even when civilian nurses work together with military nurses.

decision making for the surgeon who faced surgical trauma on an infrequent basis, supplementing the knowledge attained in the ATLS course.³ The ATLS, in comparison to the DSTC, focuses on the initial management of the severely injured and the consequences contributing to death within the first hour after injury.³ The DSTC has a core group of military medical and nurse leaders motivated to develop a targeted nursing curriculum for the DSTC, suggesting a way forward when developing further training for the entire DSTC. This experience postulates that military leaders (in this case, military nurses) are well suited to roles in education and training, particularly when this involves learning across disparate groups and their multidisciplinary training.²

(Overview of DSTC & DPNTC course: see appendix)

Issues with the training programs for our civilian nurse participants

The DPNTC course is a conjoined course within the DSTC. The DPNTC intends to develop nurse leaders in trauma, where injury is the world's third leading cause of death.³ The DPNTC was first offered in Sydney in July 2004. The first international DPNTC course was conducted in New Zealand in August 2004. The DPNTC had its origins in a meeting held in August 2003, as a particular need for further education in perioperative nursing care of the trauma patient was realised, particularly in teamwork and collaboration during trauma surgery where the lack of team stability may place additional risk on the trauma patient.⁴ Partly, that recognition has emerged because of the military service undertaken by course faculty members. Military reservists, who are part of the faculty, are also skilled civilian professionals who train and provide time and expertise for what is usually operational military service.⁵

As the DPNTC course developed, it became clear that while the existing program represented a unique opportunity for developing team learning and training, the course did not fully realise this. In part, the didactic presentation of the course materials, with sessions comprising a rapid-fire series of lectures focusing on surgical decision making, complex pathophysiology and surgical skills and techniques, left some feeling alienated. Faculty also observed that the mix of didactic lectures, some from surgeon faculty and others presented by nurse faculty in separate sessions, suited the more experienced nurses but did not resonate as well with the rest of the participants. The participants were not reacting to the course as we expected. Rather than joining

in with the surgeons and anaesthetists in the lively discussions, many nurses were left floundering. It was clear that the DPNTC needed to be delivered in a more easily digestible format, which better-engaged participants. Borrowing from educational theories by Dewey and others, the course needed to be redesigned with the following three key principles in mind:⁶

1. Each learner needs knowledge to learn. It is impossible to assimilate new knowledge without having some structure developed from previous knowledge to build on.
2. People need to be motivated to learn. Motivation provides the answer to the question, Why am I learning this? Or, more importantly, Why would I want to learn this?
3. Learning is a social activity. Rather than isolating learners from social interaction in a darkened lecture theatre, the course could create synergies through active participation with the course materials, conversation and learning from each other.⁷

Military concepts and civilian trauma training

Because of our collective military experience, we have learned that high-performing teams are the crucial element to mission success. Many readers will be aware that this is apparent when deploying on operational duties, where languid handovers and time to find your feet are a luxury; teams need to be ready to hit the ground running. This is assisted when deployed with military health professionals who have worked and trained together on familiar platforms. However, these deployments are often into disparate Australian or multinational teams where the member, equipment, hierarchies, processes, supports and environments are uncertain.³ In these situations, the ability to form teams, develop a shared understanding and create workable systems of care are more important attributes than individual clinical skills.⁵

The French Military's Advanced Course for Deployment Surgery (ACDS) is conducted for military surgeons before deployment. It prepares them to treat penetrating, blunt and blast trauma and non-traumatic emergencies and provide care to civilian populations. The course, like the DSTC, focuses on a combination of didactic lectures, case reports of deployment experiences and practical (cadaveric and high-fidelity simulation) workshops. Like the DSTC, the ACDS militates against the lack of trauma exposure that most military and civilian surgeons do not have by providing a wide range of skills and expertise in treating complex trauma casualties.⁸

Courses such as the ACDS and DSTC provide a specific skill set and knowledge base that civilian training does not. In the case of ACDS, no specific military course existed for the French before 2007.⁽⁸⁾ According to the authors, the ACDS seems to provide appropriate training for military surgeons. Another training module was developed in 2012, which trains team members to work effectively and is built around standardised sequences of reception and triage of simulated mass casualties and management of patients with massive haemorrhage.⁸

According to Stansfield and Tai (2021), the use of practical and low-cost measures found in simulation has the potential to form part of a craft skill maintenance schedule to be used with other measures, such as cognitive rehearsal and practice of specific techniques on surgical jigs and higher fidelity perfused models (such as those found on the second and final day of the DSTC program).⁹ Stansfield and Tai (2021) contend that there is a medium-term requirement for the military surgical community to research and develop acceptable means of identifying learning needs and preventing surgical decay. This would facilitate the retention of expensively gained and hard-won surgical craft skills and could be maintained by identifying and understanding surgical decay and delivering effective solutions to help secure optimal patient outcomes through regular team training.⁸

Team training within the DSTC is emphasised to improve performance. The article by Forse, Bramble and McQuillan (2011) supports that team training can improve operating room performance and substantiates increasing evidence that supports team training.¹⁰ Forse et al. (2011) determined that elements of multidisciplinary training such as checklists and the standardisation of systems appeared to remain with the participants after training ceased and that continued team training would enhance performance.¹⁰ Such findings have spurred our continued development of the multidisciplinary training in the DPNTC, emphasising the value of system standardisation, protocols and checklists. Multidisciplinary simulation exercises in military medicine are also found in pre-deployment simulated training programs such as HOSPEX (Hospital Exercise).¹¹ HOSPEX is conducted by the UK Defence Medical Services (DMS) for a field hospital and the personnel working in it, incorporating a three-level framework for simulation; micro-simulation (individuals), meso-simulation (surgical teams) and macro-simulation (entire hospitals).¹² The Australian Army has adopted HOSPEX; however, the Australian version has not yet been tested on deployment experiences. Therefore, the

experiences of other militaries and civilian disaster relief organisations are necessary to evaluate their echeloned capability.¹² The DSTC also offers the necessary simulation training to complement micro-simulation and meso-simulation, with the primary goal being to improve the safety and quality of care provided by the multidisciplinary surgical team.¹¹

Similarly, civilian operating theatre teams, formed over time, developed their own strategies and behaviours to perform largely elective and non-time critical emergency surgery during business hours. However, high-end trauma often arrives unexpectedly, late at night and on weekends where it is likely that many of the staff on duty or called in may not have worked together previously, and team composition and roles will be uncertain. Here the ability to quickly organise and identify leaders who can provide synergistic and prioritised activity is critical. In these situations, the military rank structure, with a common foundation in training and experience, may be the ideal example of organisational leadership, meaningful communication and collegiality. As Foley et al. (2002) discovered, there is more collegiality and better communication between military nurses and physicians in the military than compared to civilian nurses and physicians.¹³ This is thought to be due to a shared understanding for military health professionals that arises from shared training and experience. This is codified in the military rank structure, where a nurse may be higher ranked than a doctor and will direct their work within a shared understanding of the military objectives.¹³

The flattening of social hierarchies occurs in the military along linear paths, whereby design-centric leadership reveals an organisational environment and removes itself from everyday management for self-managed behaviours to emerge.¹⁴ Now, military nurse leaders are pivotal in military medicine as they have the experience and skills to work as peers rather than subordinates. This has determined and demanded (politely) that our voices be heard. Therefore, how does mutual respect from military medicine, the battlefield and the military rank structure, flatten out the civilian systems that enable nurses to have a voice? The challenge for us as course faculty was codifying this respect and willingness to follow among our civilian 'situational leaders' in trauma.

Crew resource management and damage control

Broader military experience has directly led to the development of two key concepts that have become indispensable in modern trauma and medical care.

The first is a process aircrew use to identify and manage threats to ensure safe and effective mission operations in a very unforgiving environment. Termed Crew Resource Management (CRM), this is a set of concepts that target individual and team behaviours such as communication, leadership, interpersonal relations, conflict resolution, preparation, planning and vigilance to enhance team communication and coordination to reduce errors and improve team response, particularly in high-stress and emergency situations.¹⁵

The naval concept of damage control comes from a shared understanding of a ship's company in war and their actions when threats were realised, and the ship was on fire and sinking. Borrowed from the United States Navy, it represents 'the capacity of a ship to absorb damage and maintain mission integrity'.¹⁶ Damage control are attempts by the ship's company to limit the extent and severity of damage and recover from it by working with the damage tolerance of the vessel.¹⁷ Like a trauma patient, the provision for limiting damage is a function of the ship's design—or a patient's reserve. In a ship, armour compartmentation, systems distribution, redundancy and selection of materials contribute to the ship's integrity. The ship's crew (read surgical team) controls further damage from either fire or flooding to recover combat capability, functionality and manoeuvrability.¹⁷ Damage control is a set of actions leading to coordinated efforts to localise damage while making minimal emergency repairs to get the ship to its most viable operational state. The concept has influenced military care and disaster planning in mass casualty incidents by maximising limited resources of supplies or time.³ The concept, as applied to surgery, has been performed for over a century since Pringle first packed an injured liver, delaying the deterioration of a patient in a state of physiological frailty from exsanguination.³

Trauma care is different to elective care

A key tenant of the course and an understanding for all trauma staff is that effective trauma care differs from our normal predictable practice. For example, a misheard instruction leading to the wrong piece of equipment being provided during an elective procedure will be unlikely to gravely affect the patients' outcome. However, not having the haemostat ready when releasing the pressure of a severed artery can be fatal. Similarly, the physiological effects of additional blood loss during definitive surgical repairs will be tolerated very differently between the well-prepared elective patient and the coagulopathic, acidotic and cold (typical) trauma patient. The notion of 'live to fight another day' is vital in damage control care,

and like a floundering warship struck by a torpedo, survivability for the trauma patient relies upon a skilled crew working effectively and quickly to attain a minimal survivable repair to restore function.

The central role of communication in raising team performance

Team training in communication is paramount in the operating room (OR). Combined with good leadership principles, it promotes a culture that fosters collegial relationships with mutual respect. We have found that military operations require effective communication, transferrable in the OR and the surgical team planning surgery for the patient. A clear understanding of a treatment plan allows the team to manage human and material resources appropriately.

Bunin et al. (2021) define meaningful communication as clear, concise and direct, using closed-loop techniques for confirmation.¹⁸ In closed-loop communication, once a team member has requested information or asked for a procedure from an individual, the individual would acknowledge the request explicitly and state when it is complete. This allows the sender to know the receiver has the message avoiding errors of omission.¹⁹ Most importantly, without such guiding principles, communication quickly degrades to noise, with noise leading to confusion and confusion to mission failure. In a crisis, teams are often required to work at the upper limit of their capacity. However, we also know that simple tasks are difficult under stressful conditions. Meaningful team communication can help move the team forward by sharing goals, creating a safe environment and taking care of the team so they will take care of everything else.¹⁸

Principles of adult learning

Feedback offered the opportunity for reflection, and subsequent meetings of the DPNTC faculty led to the continuous revision of the curriculum. Unfortunately, during this process, we failed to address the fundamental principles of adult education. The theories of andragogy, coined by Malcolm Knowles (1998), offered principles of adult education that differed from others in several respects appreciating that the learner has a need to know, they self-conceptualise, are experienced, have a readiness to learn and are orientated to learning.²⁰

Using the principles outlined by Knowles (1998), we were able to sympathise with the situation that the learner finds themselves in during a course and their motivation to learn. With that in mind, we

again looked at the feedback from previous courses. We realised that the course had weighted away from acquiring key practical perioperative nurse skills to more abstract medical- and surgical-based considerations. With this realisation, we designed a practical curriculum that complemented the established surgical program. Guided by Knowles' adult learning principles, we planned for ways in which the course could be better pitched to its intended audience.

Trauma training should result in better team performance

While the military is not immune to missteps and miscommunication, we learn from past mistakes and have internalised the need for careful planning, preparation and training prior to the event, for example, with sudden onset disasters and disaster preparedness, such as during the COVID-19 pandemic.²¹ James T Reason's 'Swiss cheese' model (2001) provides a schema for patient security by exposing the dangers of cognitive bias and system mishaps in the healthcare industry. Holes in communication reveal a chain of barriers, cumulative acts, miscommunications and weaknesses. These holes in communication open in the presence of inconsistencies by individuals, teams or inefficiencies of a system.³

In many of our civilian operating rooms, team planning and training for receiving an unexpected trauma patient, or a sudden serious medical emergency, are not common. This is partly due to a general lack of recognition of the role non-technical skills, including teamwork, play in healthcare. There is also an assumption that if you are more prepared than other personnel-team members, the procedure or process, will just 'fall into place'.

Moreover, when briefings take place, these are often among separate craft groups and rarely involve the whole team. Additionally, while huddles and time-outs are becoming more common, few surgical teams practice the CRM routines common in the pre-flight checks of a military or civilian aircrew. Similarly, team debriefing outside of extraordinary events in the operating theatre is relatively uncommon. It often focuses on ensuring individuals' emotional wellbeing. Thus, important planning, role delineation and team learnings are missed.

Simulation training in the DSTC evaluates competency and performance, revealing the participant's learning needs. The debriefing after a simulated trauma surgery (on day three of the course) provides rapid feedback for the participants

from both faculty and peers, reinforcing cognitive skills and refining leadership and teamwork.³

Protocol-based care, including checklists

The faculty wanted to emphasise the concept of damage control applied in trauma surgery instead of ships. We felt that convincing experienced nurses that protocol-based care, including checklists, was the way forward may be challenging. Bunin et al. (2021) determined that communication should be routinely practised. Assumptions that the entire OR team knows what is needed in a timely manner for a deteriorating patient place them at risk of error.²² For teams to function in high-stress environments, a shared mental model of the key steps and goals of the mission was crucial to improve performance and reduce error.³

History has revealed that theoretical knowledge counts little on the battlefield. It is the importance of structured actions and practical rehearsal, in the form of practice runs and battle drills, which saves lives. For example, when learning how to fire a weapon, participants learn safe weapons handling and how to assemble, disassemble, clean and care for a weapon before any actual firing. US Army doctrine defines a battle drill as a collective action performed by a small team and rehearsed until it is performed without a deliberate decision-making process.²³ Without this process, it would be expected that under fire military members would revert to familiar personality-based behaviours. Similarly, in the operating theatre novel, high-stress situations could lead to clinicians biasing decisions towards habit and modulating their propensity to fall into familiar patterns of behaviour and fail to be timely.²⁴ It was clear that protocol-based care and checklists were the way forward, and developing a new curriculum was a priority.²⁵

Engaging our participants

Planning for operations with walk-throughs and the use of 'mud maps' are standard military practices to account for human factors.⁵ These practices ensure that everyone is on the same page. Ships' companies, infantry units and aircrews have systemised a series of well-worn mnemonics and ingrained responses, as briefings and checklists are second nature when planning for military operations.²⁶

However, healthcare cannot be reduced to a series of 'manoeuvres on a battlefield' or protocols as each patient is individual, even in extremis. Thus, it was planned to take the principles of systematic instruction into the DASTC course with didactic

background lessons and large group discussions, which surround the principles of multidisciplinary teamwork and damage control surgery, in conjunction with the necessary goals of trauma care, while keeping in mind more pragmatic objectives of ethical and individual focused care.³

The importance of a shared mental model and developing an adult-based learning program that suits nurses is vital. Nurse leadership across civilian and military structures drives the importance of non-technical skills and engagement as a key factor. Informally, nurse leaders can make things happen by mentoring and elevating the contributions of others over themselves; all of this occurs in relationship building, sharing organisational knowledge and creating a safe environment for others.

Realising this, informal military nurse leaders with years of experience training for emergency scenarios and operations sought to redesign the course by emphasising the importance of clear communication (briefing), rehearsal and drill. By utilising competency-based training methods, common in ADF training, a needs and gap analysis was undertaken to identify the knowledge, skill and behaviours the perioperative nurse requires to be an effective team member in trauma. The experiences of far forward, mobile and austere military environments revealed that there may not be the luxury of performing damage control surgery on every casualty, with abbreviated surgical control (TASC) performed on the critically wounded about to exhaust their physiological reserve.³

Therefore, the point is made that performing surgery in resuscitation of the trauma patient is a serious consideration, with substantial sequelae for the deteriorating patient and getting the decision making right is an essential step in survival. Once the key foundational concepts are established, this is then 'operationalised' for the participants. The new program needed to ensure that the key perioperative nurse skills of communication, situational awareness, organisation of equipment, supplies and resources, including staff, and communication with other areas of the hospital were emphasised for the participants to build upon their combined experiences and frame their thinking for their own learning in trauma surgery.

Establishing a shared mental model and a 'mud map' for action

With key skills embedded in the program, the curriculum would allow the participants to establish their own priorities for the trauma patient undergoing surgery. The course was now to facilitate

conversation, apply the key principles of CRM and damage control and encourage the participants to develop their shared priorities for the patient. To assist the participants in their decision making, the faculty established four domains to frame their shared priorities:

1. Patient factors, including the pathophysiology arising from a mechanism and pattern of injury together with age-related differences and legal and ethical considerations.
2. Teamwork and communication, including the team roles and priorities, leadership, how to communicate under stress and situational awareness.
3. Equipment and resources, including the priorities, management and preparation of all equipment and supplies.
4. Hospital resources, organising and giving context to the capacities and capabilities of each healthcare environment (including the staff) and how this affects the care plan.

Once the four domains were established, the groups formed a checklist with five priorities (sound familiar to military or aviation types?). The personalised checklist was then practised through the course using walk-throughs and tabletop exercises and incorporated into simulations and more complex scenarios. With the process formulated, it was pleasing to observe how it was assimilated into the core concepts of the curriculum with continuing workshop discussions applied to the paediatric, geriatric, pregnant and mass casualty patient(s). This approach was piloted several times on DPNTC courses on the eastern seaboard. It remained consistent while utilising the key aspects of andragogy and pedagogy. It was interesting to note that the checklists and the priorities identified among the participants differed very little.

The initial piloted programs provided the participants, who had varying levels of seniority and experience, a shared understanding and a base level of performance to build on with 'aide-mémoires' that could be practised in their hospitals when a trauma occurred. Their team could then swing into action with a shared mental model and a clear series of priorities and actions. Learners could build upon each element of the course and work them into the schemata (Patient, Team, Equipment and Organisation). Importantly, we based this on key tenants of androgyny related to actions they needed to perform. The participants eventually identified the most pressing information of a pending trauma patient (in effect, planning) and walked the patient

information through a tabletop discussion, at a slow pace, then practically, through a fast-paced simulation.²²

Improvements in participant course evaluations are often multi-factorial as it is difficult to parse out which part of the course resulted in participants gaining more from a program. The evaluations of the new DPNTC design reported that participants felt far greater confidence in trauma care and the faculty feedback was universally positive. The new and improved DPNTC has revealed a 'mud map' on how to deliver the program and key nursing elements explaining and reinforcing pertinent aspects of trauma care for the critically injured patient. The goal is to introduce these concepts across the DSTC with a shared 'mud map' for doctors and nurses in the future. In addition, key non-technical skills such as teamwork, communication, situational awareness and leadership will further enhance technical and skill-based learning, for which the DSTC is renowned.

Conclusion

The evolution of the DPNTC came from feedback from participants and subsequent faculty reflections to improve the course. Some of the faculty, who served in the military, realised that high-performing teams were crucial to the safe delivery of surgery and the patient's successful recovery. Broader military experiences of some faculty members led to the introduction of two key concepts. First, the concept of CRM and the process by which military aircrew use to identify and manage threats to ensure safe and effective mission operations in unforgiving environments. Second, the naval damage control concept, which influenced military trauma care (DSTC) and disaster planning.³ The mindset that trauma care is different to elective care is emphasised throughout the DSTC, with the caveat that communication and regular training results in better team performance.

The principles of adult learning acknowledge that participants are experienced clinicians who provide a rich tapestry to the curriculum. Therefore, adult learners need to be engaged in situational experiences to generate discussion rather than a theoretical classroom course. Utilising the concepts of protocol-based care and checklists addressed the challenges of engaging participants and establishing a shared mental model, with a 'mud map' for action for their own 'tool kit'.

The difference in the roles of the surgical team has realised itself in the DSTC. This lends itself to the specific roles of each discipline, where the surgeon

and anaesthetist offer a skill set that is self-evident in their role. The perioperative nurse role is more complex and incorporates a multidisciplinary approach to the shared decision making of the patient.²⁷ The body of knowledge possessed by the nurse in the context of the OR team encompasses theory and a 'hands-on approach', while being bound by highly developed non-technical skills encompassing communication, situational awareness and teamwork.²⁷ The DPNTC faculty realised that the perioperative nurse role was multifaceted and that failing to efficiently plan and communicate were, according to Boffard (2019), the two major instigators of error in trauma.³ Some of the faculty who served in the military realised that high-performing teams were equal to mission success and that safe delivery of surgery was central to the successful recovery of the patient. Combined with the concepts of CRM and damage control surgery, the premise that communication was enhanced by all members of the surgical team, the following aspects were considered in each iteration of the curriculum: anticipation, assigned roles for team members, closed-loop communication and information sharing.³ By utilising concepts of protocol-based care and checklists the participants established a shared mental model and a mud map for action in their tool kit.

Participating in courses such as the DSTC is rewarding. We as faculty appreciate that it trains surgical teams to save lives. We are also confident that participants will walk a bit taller, have more confidence and work with their colleagues to improve trauma care. Perhaps this is the real gift of learning together; to improve patient care by ascribing a shared set of protocol-based actions not dissimilar to those of our pre-hospital and in-hospital emergency department colleagues. The redesign of the DPNTC curriculum has built on participants' feedback, inspiring a group of faculty members who serve in the military to continuously develop the curriculum. This continuous development of the DPNTC has suggested a way forward for developing further training for the multidisciplinary audience in the DSTC.

The future-proofing of trauma care in a multidisciplinary surgical team requires team members who are not just technically competent but are masters of non-technical skills such as leadership, CRM and communication. The development of the DPNTC benefited from military leadership principles, underpinned by the experiences and unique skills that military health professionals gained through their shared culture between care providers and their care recipients. The article explored how

a group of military leaders developed a targeted nursing curriculum. From their experience, it was postulated that military leaders, principally military nurses, were well suited to roles in education and training, particularly when it involved learning across disparate groups for multidisciplinary training.

Acknowledgements

Definitive Surgical Trauma Course (DSTC)
Australasian Administrator, Coordinator and
Education Officer, Geoff Rose

Melbourne DSTC directors, Martin Richardson and
Kate Martin

Sydney DSTC director, Scott D'Amours

Brisbane DSTC directors, Martin Wullschleger and
Daryl Wall

Auckland DPNTC, Bronwyn Taylor

Brisbane DPNTC, Fiona Newman

Melbourne DPNTC, Chris Potter

Sydney DPNTC, Deidre Smith and Ellen Seib

Corresponding Author: Peter Sleeth,
[*sleethp@gmail.com*](mailto:sleethp@gmail.com)

Authors: P Sleeth¹, R Jithoo², C Potter³

Author Affiliations:

1 Victoria University – Allied Health Melbourne

2 Alfred Hospital

3 Williamstown

References

1. Kee CC, Foley BJ, Dudley WN, Jennings BM, Minick P, Harvey SS. Nursing structure, processes, and patient outcomes in army medical centers. *Western Journal of Nursing Research*. 2005;27(8):1040-58.
2. Armstrong ML, Allen P, Lake, Donna. Nursing Leaders in the Military Serving as Faculty a Toolkit for Nurse Faculty/Staff Preparing Military Nurse Officers for an Effective Second Career into Nursing Education. *National League for Nursing (NLN)*. 2018:1-17.
3. Boffard K, David. *Manual of Definitive Surgical Trauma Care*. 5th Edition ed. Press C, editor. London: CRC Press; 2019.
4. Taylor B, et al. *Perioperative Nurses Trauma Course Manual*, 4th Edition. *Perioperative Nurses Trauma Course Manual*2016.
5. Greaves I. *Military medicine in Iraq and Afghanistan: a comprehensive review*. Boca Raton: CRC Press; 2018.
6. McGlinn EP, Chung KC. A pause for reflection: incorporating reflection into surgical training. *Annals of plastic surgery*. 2014;73(2):1-9.
7. Hein G. *Constructivist Learning Theory. The Museum and the Needs of People*. CECA (International Committee of Museum Educators) Conference; Jerusalem, Israel1991.
8. Bonnet S, Gonzalez F, Mathieu L, Boddaert G, Hornez E, Bertani A, et al. The French Advanced Course for Deployment Surgery (ACDS) called Cours Avancé de Chirurgie en Mission Extérieure (CACHIRMEX): history of its development and future prospects. *BMJ Military Health*. 2016;162(5):343-7.
9. Stansfield T, Tai N. Surgical skill decay in the contingency era. *British Medical Journal Publishing Group*; 2021. p. 300-1.
10. Forse RA, Bramble J, McQuillan R. Team training can improve operating room performance. *Surgery*. 2011;150(4):771-8.
11. Arora S, Sevdalis N. HOSPEX and concepts of simulation. *BMJ Military Health*. 2008;154(3):202-5.
12. Gill G, Butt P, Reade M, Crozier J, Williams A, Thomas T, et al. HOSPEX in the Antipodes. *BMJ Military Health*. 2015;161(4):336-40.

13. Foley BJ, Kee CC, Minick P, Harvey SS, Jennings BM. Characteristics of nurses and hospital work environments that foster satisfaction and clinical expertise. *JONA: The Journal of Nursing Administration*. 2002;32(5):273-82.
14. McChrystal GS, Collins T, Silverman D, Fussell C. Team of teams: New rules of engagement for a complex world. London: Penguin; 2015.
15. Guerlain S, Turrentine FE, Bauer DT, Calland JF, Adams R. Crew resource management training for surgeons: feasibility and impact. *Cognition, Technology & Work*. 2008;10(4):255-64.
16. Navy UDoT. Surface Ship Survivability. In: Defense Do, editor. Naval War Publication (NWP) 3-2031. Norfolk, Virginia: US Department of the Navy; 1996.
17. King J. Total Ship Survivability and Surface Stealth Online: GlobalSecurity.org; 2002 [Military]. Available from: www.globalsecurity.org/military/library/report/2002/mil-02-1011-wavelengths02.htm
18. Bunin JL, Chung KK, Mount CA. Ten Leadership Principles from the Military Applied to Critical Care. *ATS Scholar*. 2021:317-26.
19. Victoria T. Teamwork and Communication. In: Health VDo, editor. Victorian State Trauma System: Trauma Education Initiative; 2021.
20. Taylor DC, Hamdy H. Adult learning theories: implications for learning and teaching in medical education. *Medical Teacher*. 2013;35(11):e1561-e72.
21. Defence Do. Operation COVID-19 Assist (2021). In: Defence Do, editor: Australian Government; 2021.
22. Rodziewicz TL, Houseman B, Hipkind JE. Medical Error Reduction and Prevention. Treasure Island, Florida: StatPearls Publishing; 2021. Available from: www.ncbi.nlm.nih.gov/books/NBK499956/.
23. Army U. The importance of battle drills. *Risk Management Magazine*. 2019 25 January 2019.
24. Porcelli AJ, Delgado MR. Stress and Decision Making: Effects on Valuation, Learning, and Risk-taking. *Current Opinion in Behavioral Sciences*. 2017;14:33-9.
25. Davey MS, Cassidy Tristan J, Lyons RF, Cleary MS, Mac Niocaill RF. Changes to Training Practices during a Pandemic-The Experience of the Irish National Trauma & Orthopaedic Training Scheme. *Injury*. 2020;51(10):2087-90.
26. Gawande A. The Checklist Manifesto. New York: Picador; 2010.
27. Sutherland-Fraser S, Davies M, Gillespie BM, Lockwood B. Perioperative Nursing: An Introduction. Chatswood, NSW: Elsevier Health Sciences; 2021.

Appendix

Course overview:

The DSTC course is the perfect opportunity to focus on:

- surgical decision-making in complex scenarios
- operative technique in critically ill trauma patients
- hands-on practical experience with experienced instructors (both national and international)
- insight into difficult trauma situations with learned techniques of haemorrhage control and the ability to handle major thoracic, cardiac and abdominal injuries.

The Definitive Surgical Trauma Care (DSTC) course is recommended by The Royal Australasian College of Surgeons for all Consultant Surgeons and final-year trainees. The Definitive Anaesthetic Trauma Care (DATC) course provides multidisciplinary training to consultant anaesthetists and anaesthetic fellows (post-exam) involved in trauma. The Definitive Perioperative Nurses Trauma Care (DPNTC) course is held in conjunction with the DSTC course. It is aimed at instrument and anaesthetic nurses with a minimum of two years of recent clinical experience in a perioperative setting, allowing them to develop their knowledge and skills in a multidisciplinary environment. The military module is open to surgeons, anaesthetists and nurses (civilian and military personnel). It is a one-day program and is relevant to those interested in humanitarian surgery. The military module is a combination of lectures, case studies and practical stations led by a faculty of leading military surgeons and anaesthetists. It can be attended by anyone who has completed a DSTC, DATC or DPNTC course (either Brisbane or a previous course). The DSTC will establish the core principles of damage control resuscitation and the role of the surgeon and the nurse. The key is for each participant group—surgeons and nurses—to have an opportunity to be exposed to the learning needs of each other.

Aims of the DSTC & DPNTC Course:

- Provide nursing participants with the opportunity to develop their knowledge, skills and confidence in communicating with surgeons and other nurses.
- Further develop an understanding of the procedures and processes involved in dealing with the critically ill patient undergoing trauma surgery.

(Timetable)

Day 1:

Surgical Decision Making Overview

Damage Control Overview

- Abdominal Trauma
- Haemodynamically Unstable Pelvic Fracture
- Trauma Laparotomy & Temporary Abdominal Closure
- Perioperative Nursing in Surgical Trauma
- The Roles & Priorities of the Instrument and Circulation Nurse
- The Roles & Priorities of the Anaesthetic Nurse
- Trauma Systems & Mechanisms of Injury
- Blunt Thoracic Injury
- Penetrating Thoracic Injury
- Thoracotomy – Resuscitative
- Emergency Laparotomy
- Emergency thoracotomy
- Pregnancy, Paediatrics and the Elderly
- Communication and Teamwork

Surgical decisions and techniques:

- Spleen
- Liver
- Pancreas & Duodenum
- Cardiac Repair
- Fasciotomy
- Craniotomy
- Head Injury
- Penetrating Neck Injury
- Vascular Limb Injury
- Forensics and Mass Casualty
- Multi-Trauma Case
- External Fixator
- Neurosurgery
- Burns Surgery

Day 2:

Laboratory Sessions for Surgical and Anaesthetic Skills

Day 3:

Simulation Training.

Examining Clinical Presentation and Workup of Veterans with Irritable Bowel Syndrome in a Single Medical Centre: A Case Series

P L Claassen, T Hinojosa, A Rai, M S Riddle

Abstract

Irritable bowel syndrome (IBS) is a disorder of gut-brain interaction (DGBI) that affects about 10% of the adult population in the United States. IBS pathoetiology understanding has evolved and clinical management improved despite the underdevelopment of diagnostics. Within the Veterans Affairs (VA) system, the prevalence and impact of DGBIs are high. Yet there is a paucity of information on the patient demographic features. Our team examined the history and workup of patients referred to an IBS clinic within the VA's gastroenterology service through a systematic case series study to begin a quality improvement initiative.

Introduction

Despite its prevalence, irritable bowel syndrome (IBS) remains a poorly understood disorder of gut-brain interaction (DGBI) or functional gastrointestinal disorder (FGID).^{1,2} A recent population-based study focusing on Gulf War era veterans found that IBS was the fifth most common health condition among deployed female (30.2%) and male veterans (23.9%).³ Veterans are unique because they encounter deployment exposures (enteric infections, occupational/environmental contacts) and often have mental health comorbidities underlying their disease. However, very little has been described regarding patient demographic features, presentation and diagnostic strategy. Therefore, as part of a quality improvement initiative to inform improvements in primary care-based management, an initial case series study was conducted to understand the characteristics, illness history and initial evaluation of patients referred to a new IBS clinic in the gastroenterology service of our VA medical centre.

Methods

Patients with possible prior IBS diagnoses were referred to the IBS clinic by VA gastroenterologists and primary care clinicians. A standardised data

extraction form was developed and used to extract de-identified patient data from the following sources. Information on demographics, prior history, service experience, disability, medications and medical comorbidities were retrieved from the Computerized Patient Record System and Joint Longitudinal Viewer electronic health records (EHRs). Further information included Rome Criteria,⁴ Bristol Stool Scale type,⁵ IBS symptom severity scores (IBS-SSS),⁶ Hospital Anxiety and Depression scores (HADS),⁷ General Practice Physical Activity Questionnaire categorisation,⁸ most bothersome symptom(s) and treatment history. The EHR was comprehensively reviewed to accurately determine the dates of gastrointestinal (GI) symptom onset, first chronic bowel dysfunction diagnosis (if applicable) and IBS diagnosis (if applicable). Data were entered into Microsoft Excel (Redmond, WA) and descriptively analysed by Stata IC/SE Version 16 (College Station, TX).

Results

Over eight months, 11 consecutively referred patients were included in the case series with a median age of 43 years, all male, majority Caucasian (81.8%) and predominantly from the Persian Gulf War (72.7%), post-Vietnam (18.2%) and Vietnam (9.1%) eras (Table 1). A median of 4 (interquartile range [IQR]

2.5–14.5) years from self-reported symptom onset to the first diagnosis of chronic bowel dysfunction diagnosis was observed (Table 2). The first diagnosis recorded in the patient's EHR was most often IBS (66%), followed by functional and chronic diarrhoea. Utilising Rome Criteria by excluding alternative aetiologies, a median of 9 (IQR 3–15) years between first symptom onset and confirmed IBS diagnosis was recorded. Two patients did not have IBS but rather an organic disease discovered during workup in the IBS clinic. Median IBS-SSS was 270 (IQR 206–367), with 40% of patients meeting the criteria for severe IBS. Our population's Bristol Stool Scale distribution is skewed rightward, indicating a looser stool type predominance (Figure 1). Co-morbid anxiety and depression were common, with 30%

and 40% identified on the HADS, respectively. The majority of patients were physically inactive. Many had mental health diagnoses, and some were noted to be taking daily medications with off-target GI side effects, including selective serotonin reuptake inhibitors (1/11), calcium channel blockers (3/11), alpha receptor blockers (2/11) and serotonin/norepinephrine reuptake inhibitors (1/11). Cramps, diarrhoea, gas, bloating and urgency were the most frequently reported bothersome symptom. Red flag symptoms were present in several patients. When evaluating the current practice in diagnostic workup among patients referred to the IBS clinic, the minority of patients met the current standards of a positive diagnostic workup (Table 3).

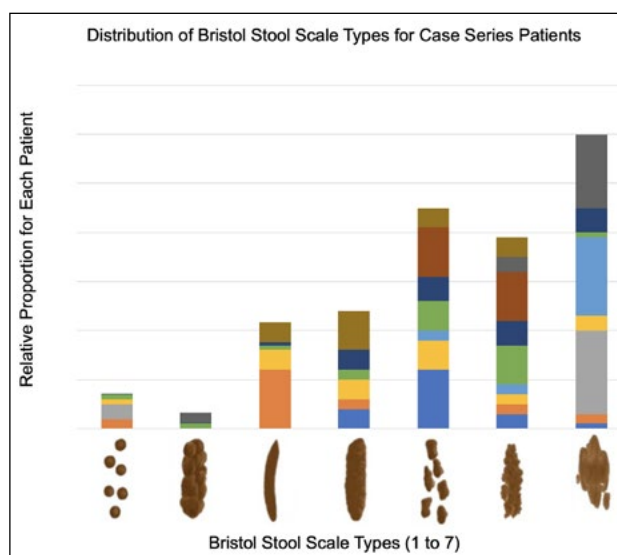


Figure 1. Each colour represents one individual patient and the relative proportion of bowel movements they passed at each stool consistency during the average week.

Table 1. Demographic characteristics of veterans who were referred to IBS clinic

Parameter	Median (IQR ^a) or n/N (%)
Age, years	43 (39–48)
Male sex	11/11
Race/Ethnicity	
White	9/11 (81.8%)
Asian	1/11 (9.1%)
Unspecified	1/11 (9.1%)
Hispanic/Latino	0/11
Branch of Service	
Navy	5/11 (45.5%)
Army	4/11 (36.4%)
Marine Corps	2/11 (18.2%)
Period of Service	
Persian Gulf War	8/11 (72.7%)
Post-Vietnam	2/11 (18.2%)
Vietnam Era	1/11 (9.1%)
Service connection, % disabled (n=10)	90 (57.5–100)
Number of comorbid conditions	10 (6–15)
Number of oral medications	9 (5–10)

aIQR = interquartile range

Table 2. Clinical presentation of veterans during initial visit to IBS clinic

Parameter	Median (IQR ^a) or n/N ^b (%)
Years from symptom onset to first functional gastrointestinal disorder diagnosis (n=9)	4 (2.5–14.5)
First functional gastrointestinal disorder diagnosis (n=9)	
IBS-D	3/9 (33.3%)
IBS-M	2/9 (22.2%)
IBS-U	1/9 (11.1%)
Functional diarrhoea	2/9 (22.2%)
Chronic diarrhoea	1/9 (11.1%)
Years from symptom onset to IBS diagnosis (n=7)	9 (3–15)
IBS phenotype (n=7)	
IBS-D	4/7 (57.1%)
IBS-M	2/7 (28.6%)
IBS-U	1/7 (14.3%)
IBS-Symptom Severity Score (n=10), 0–500	270 (206–367)
Moderate (175–300)	6/10
Severe (300–500)	4/10
Hospital Anxiety and Depression Scale-Anxiety (n=10), 0–21	9.5 (6.8–16.8)
Normal (0–7)	3/10
Borderline abnormal (8–10)	4/10
Abnormal (11–21)	3/10
Hospital Anxiety and Depression Scale-Depression (n=10), 0–21	4 (1.8–4.5)
Normal (0–7)	6/10
Borderline abnormal (8–10)	0/10
Abnormal (11–21)	4/10
General Practice Physical Activity Questionnaire (n=10)	
Active	3/10
Inactive	7/10
Most bothersome symptom(s) (n=10)	
Diarrhoea	4/10
Constipation	1/10
Cramps	6/10
Gas/bloating	3/10
Urgency	3/10
Frequency	2/10
Incontinence	1/10
Perceived incomplete evacuation	1/10
Haemorrhoids/rectal bleeding	2/10
Borborygmi	1/10
Red flag symptoms (n=10) ^c	
Nocturnal symptoms	4/10
Blood in stool ^d	3/10
Unintentional weight loss	1/10

aIQR = interquartile range**b**One patient excluded due to incomplete IBS clinic intake**b**No patients with fever or iron deficiency anaemia, or family history of IBD, CRC or CeD**c**Does not distinguish haemorrhoids/fissures

Table 3. Adherence to IBS diagnostic guidelines in veterans referred for care at IBS clinic

Guideline Standard	n/N ^a
Completed coeliac disease testing	4/10
Completed fecal calprotectin or lactoferrin testing	3/10
Completed c-reactive protein testing	4/10
Avoided fecal ova or parasite testing	8/10
Completed colonoscopy if red flags and/or over 50 years ^b	9/10
Completed colonoscopy if no red flags and/or under 50 years	1/10

a One patient excluded due to incomplete IBS clinic intake

b Data was collected before updated CRC screening guidelines changed to 45 years

Discussion

Diagnosis and management are essential when optimising outcomes and improving the quality of life in persons with medically unexplained illnesses, including DGBI.⁹ Several important observations were made from this case series. First, there was a noteworthy delay from time of symptom onset to the first EHR-documented chronic DGBI/FGID diagnosis. Diagnostic delay occurs in many populations with GI conditions. It is known to greatly increase the burden of disease and healthcare utilisation.¹⁰ Second, among our cohort of Veterans, there was a high level of mental health comorbidities (8 of 11 had at least one mental health diagnosis), as well as the use of medications with known GI side effects. While the genesis of GI symptoms often predated the start of these medications, it may be important to consider working with mental health professionals to optimise treatment regimens for both GI and mental health conditions. A future study may be indicated to explore medication interactions and disease management in Veterans with mental health disorders and DGBI. Finally, these data provide an initial assessment of the current practice patterns of diagnostic workup of patients with chronic GI complaints. Within the group of patients referred to the IBS clinic, we observed that a positive diagnostic strategy with the utilisation of Rome Criteria-based definitions for IBS, plus a limited amount of stool testing and referral for colonoscopy was not universally performed, despite existing contemporary expert reviews and guidelines. These guidelines suggest that IBS should not be made as a diagnosis of exclusion but rather a confident, positive diagnosis after other conditions (inflammatory bowel disease, coeliac disease, enteric infection) have been ruled out.¹¹ Of the referred patients with possible IBS, two ultimately did not (one had coeliac disease,

and one had severe disaccharidase deficiency with malabsorption). These observations will form the basis of future studies and initiatives to optimise the diagnosis and management of veterans with IBS by improving provider awareness of current clinical guidelines.

While these findings are valuable, they are also limited and require caveats. The sample population was not a random sample of veterans with IBS. It likely reflected the selection of more severe cases referred from providers in the gastroenterology service or primary care providers with challenging patients. Future systematic investigations of veterans with IBS diagnoses not seen by gastroenterologists are needed to more appropriately describe the patient population and their management. Furthermore, the results from this study reflect the experience of one VA medical centre and are unlikely to be generalisable to patient experiences at other centres.

In summary, we believe these data support the need to investigate DGBI further among veterans to advance the development and utilisation of effective diagnostic and treatment techniques directed towards the underlying pathogenesis and holistically consider the contributions of both the psychological and GI facets of the condition. For IBS and other medically unexplained illnesses common in veteran populations, we know that building a trusting and quality relationship between patient and provider is critical for improving health outcomes and quality of life.¹² Advancing provider education through quality improvement initiatives that emphasise the utilisation of positive diagnostic strategies, evidence-based treatments and the formation of a healthy provider-patient relationship are attainable goals that will likely improve the quality of care for veterans with IBS.

Corresponding Author: Pierce Landon Claassen,
pierce.claassen@wsu.edu

Authors: P L Claassen¹, T Hinojosa², A Rai²,

M S Riddle²

Author Affiliations:

1 Washington State University Elson S Floyd College
of Medicine

2 VA Sierra Nevada Health Care System

References

1. Grad S, Dumitrascu DL. Irritable Bowel Syndrome Subtypes: New Names for Old Medical Conditions. *Dig Dis*. 2020;38(2):122-127. doi:10.1159/000505287
2. Lacy BE, Pimentel M, Brenner DM, et al. ACG Clinical Guideline: Management of Irritable Bowel Syndrome. *Am J Gastroenterol*. 2021;116(1):17-44. doi:10.14309/ajg.0000000000001036
3. Dursa EK, Barth SK, Porter BW, Schneiderman AI. Health Status of Female and Male Gulf War and Gulf Era Veterans: A Population-Based Study. *Womens Health Issues*. 2019;29 Suppl 1:S39-S46. doi:10.1016/j.whi.2019.04.003
4. Schmulson MJ, Drossman DA. What Is New in Rome IV. *J Neurogastroenterol Motil*. 2017;23(2):151-163. doi:10.5056/jnm16214
5. Blake MR, Raker JM, Whelan K. Validity and reliability of the Bristol Stool Form Scale in healthy adults and patients with diarrhoea-predominant irritable bowel syndrome. *Aliment Pharmacol Ther*. 2016;44(7):693-703. doi:10.1111/apt.13746
6. Francis CY, Morris J, Whorwell PJ. The irritable bowel severity scoring system: a simple method of monitoring irritable bowel syndrome and its progress. *Aliment Pharmacol Ther*. 1997;11(2):395-402. doi:10.1046/j.1365-2036.1997.142318000.x
7. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta Psychiatr Scand*. 1983;67(6):361-370. doi:10.1111/j.1600-0447.1983.tb09716.x https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/192453/GPPAQ_-_guidance.pdf
8. Department of Health. The General Practice Physical Activity Questionnaire: A Screening tool to assess adult physical activity levels, within primary care. 2009
9. Boersma P, Cohen RA, Zelaya CE, Moy E. Multiple Chronic Conditions Among Veterans and Nonveterans: United States, 2015-2018. *Natl Health Stat Report*. 2021;(153):1-13
10. Irvine AJ, Chey WD, Ford AC. Screening for Celiac Disease in Irritable Bowel Syndrome: An Updated Systematic Review and Meta-analysis. *Am J Gastroenterol*. 2017;112(1):65-76. doi:10.1038/ajg.2016.466
11. Adriani A, Ribaldone DG, Astegiano M, Durazzo M, Saracco GM, Pellicano R. Irritable bowel syndrome: the clinical approach. *Panminerva Med*. 2018;60(4):213-222. doi:10.23736/S0031-0808.18.03541-3
12. Phillips LA, McAndrew LM. Empirical Evaluation of Veterans' Perceived Non-Concordance with Providers Regarding Medically Unexplained Symptoms. *Couns Psychol*. 2019;47(5):770-795. doi:10.1177/0011000019890317

Dual Loyalty and the Medical Profession for Australian Defence Force Medical Officers

M Vinson

Abstract

Background: Military medical officers often practice in the context of dual loyalty and manage professional obligations to both their patients and the militaries in which they serve.

Purpose: This article considers specific frameworks through which Australian Defence Force (ADF) Medical Officers practice. It seeks to highlight the potential interaction between such frameworks and dual loyalty.

Materials and methods: This article is a narrative analysis of dual loyalty in military medicine and specific frameworks through which ADF Medical Officers practice.

Results: The frameworks this article considers establish the primacy of the medical profession for ADF Medical Officers. However, dual loyalty will likely render the practical application of these frameworks more complex. Furthermore, the dual loyalty in military medicine is likely distinct from that encountered in other medical fields.

Conclusion: The extent and implications of the dual loyalty of military medicine could be investigated further for ADF Medical Officers while considering the frameworks in which they practice and the civilian organisations with which they interact.

Dual loyalty and the medical profession for Australian Defence Force Medical Officers

Australian Defence Force (ADF) Medical Officers concurrently enact their medical and military professions. ADF Medical Officers also practice within specific frameworks that often, rightly, preference their medical profession. During international armed conflict, these frameworks include International Humanitarian Law (IHL) and the Australian *Criminal Code Act 1995*. ADF Medical Officers are also registered through the Australian Health Practitioner Regulation Agency (AHPRA) and have obligations within broader Australian Health Law. These frameworks are likely rendered more complex in their practical application by the dual loyalty of military medicine.

Military medical officers are afforded non-combatant status during international armed conflict under customary IHL. A distinction between combatants and non-combatants during international armed conflict was codified in The Hague Conventions of 1899 and 1907. Protocol I to the Geneva Conventions expands upon this by stating that 'members of the armed forces of a Party to a conflict (other than

medical personnel and chaplains...) are combatants, that is to say, they have the right to participate directly in hostilities'.¹ This distinction is enduring, and 'today, any chaplain or medical person who takes direct part in hostilities becomes an unlawful combatant, forfeits non-combatant immunity, and becomes a lawful target'.² The non-combatant status of medical personnel separates ADF Medical Officers from their non-medical colleagues (with the exception of chaplains). It obligates them not to actively participate in hostilities. Medical personnel must also provide adequate medical care when treating detained persons. For Australian medical professionals, this is further outlined in the *Criminal Code Act 1995*.

The *Criminal Code Act 1995* (the Act) outlines serious offences that can be considered either war crimes or crimes against humanity. Section 628.95 of the Act considers the elements of the offence 'War crime—medical procedure', which occurs in the following circumstances:

(a) *the perpetrator subjects one or more persons to a medical procedure; and*

- (b) the procedure seriously endangers the physical or mental health, or the integrity, of the person or persons; and
- (c) the perpetrator's conduct is not justified by the state of health of the person or persons; and
- (d) the perpetrator knows that, or is reckless as to whether, the conduct is consistent with generally accepted medical standards that would be applied under similar medical circumstances to persons who are of the same nationality as the perpetrator and are in no way deprived of liberty; and
- (e) the person or persons are in the power of, or are interned, detained or otherwise deprived of liberty by, the country of the perpetrator as a result of an international armed conflict; and
- (f) the conduct takes place in the context of, and is associated with, an international armed conflict.³

While this offence is not strictly limited to ADF Medical Officers, it is more likely applicable to them given the settings in which it can occur.

For civilian medical professionals to incur a 'War crime—medical procedure' offence, they would foreseeably be representing the Australian Government during an international armed conflict. This follows the broader convention that 'only regular combatants or other individuals, including civilians, who have a link to a Party to the conflict, may be subject to IHL's war crimes provisions for offences committed in international conflicts'.⁴ ADF Medical Officers are more likely to confront the settings in which the 'War crime—medical procedure' offence may arise. Additionally, the offence creates an obligation to apply generally accepted medical standards when treating detained persons. For ADF Medical Officers, these standards can be considered through their registration requirements with AHPRA and broader Australian Health Law.

Like their civilian medical colleagues, ADF Medical Officers are registered as Medical Practitioners with AHPRA. This is in accordance with the Queensland-hosted *Health Practitioner Regulation National Law Act 2009* and its Australian State and Territory equivalents. This registration enables the regulation of ADF Medical Officers by the medical profession and requires them to abide by Australian Health Law. In Australia, this law is derived from a number of sources and the 'three most significant areas of law that have shaped health law are criminal law, tort law and family law'.⁵ Despite the breadth of this law, there are general principles that are applicable throughout the practice of medicine. Consequently, these principles are likewise applicable to the

medicine practiced by ADF Medical Officers.

One such principle is that doctors owe a duty of care to their patients when providing professional advice. The nature of this duty can be further considered through *Rogers v Whitaker*. In this case, the High Court of Australia decided that 'a medical practitioner's duty of care in providing advice and information to a patient concerning proposed treatment was primarily to provide that information which the reasonable person in the patient's position would require'.⁶ This duty of care likely aligns with Section 628.95 of the *Criminal Code Act 1995*, which establishes an expectation to apply generally accepted medical standards to the treatment of detained persons. As such, ADF Medical Officers have a duty of care towards the patients they treat during their usual practice through Australian Health Law, and likely an equivalent duty when treating detained persons through the *Criminal Code Act 1995*. When considered in the context of their AHPRA registration, ADF Medical Officers' professional medical obligations are broadly equivalent to their civilian colleagues, even during international armed conflict. However, the dual loyalty of military medicine lends further complexity to the practice of military medicine depicted within the frameworks discussed above.

Dual loyalty is a contested concept for military medicine, which can become involved in considering whether physicians can ethically serve within militaries. Sidel and Levy insist that 'it is morally unacceptable for a physician to serve as both a physician and a soldier in the United States military forces, and probably other military forces as well'.⁷ This assertion is based on the ethical dilemmas they believe to be inherent to service as a military medical officer. Namely, 'subordinating the best interests of the patient, overriding patients' wishes, failing to provide care, blurring combatant and non-combatant roles, and preventing physicians from acting as moral agents within the military'.⁷ In contrast, Madden and Carter posit that 'there is nothing in the ethos of the professions of medicine and arms that prohibits an individual from being a member of both professions. They have different ends, yet the ends are certainly compatible, even mutually supportive'.⁸ Broader considerations of whether military service and the medical profession are compatible are beyond the scope of this article; however, they provide a background to contrast dual loyalty encountered in military medicine against that of other medical fields.

Dual loyalty can also be encountered in prison medicine, and occupational and environmental medicine. However, the dual loyalty within these

professions is similar yet distinct from that of military medicine.⁹ While considering prison medicine, Pont et al. suggest that dual loyalty is a 'clinical role conflict between professional duties to a patient and obligations, expressed or implied, to the interests of a third party such as an employer, an insurer, or the state'.¹⁰ This serves as a useful definition for dual loyalty on the whole. Additionally, the conflict they describe is not easily reconciled. Pont et al. advocate that dual loyalty should be minimised by separating patient care from medical administrative functions conducted in the interest of the state.¹⁰ Dual loyalty is likewise encountered through the practice of occupational and environmental medicine.

For Australian occupational and environmental physicians, dual loyalty involves the 'responsibilities to individual patients under their care, workers in a particular workplace, employers, the general public and specific responsibilities under legislation'.¹¹ Again, this can arguably be applied to dual loyalty regardless of the field of medicine in which it occurs. When weighing these potentially conflicting obligations, the Royal Australasian College of Physicians suggests that 'problems are most likely to arise if potential conflicts of interest are not recognised; particularly if one party is not aware that the [Occupational and Environmental Physician] has other responsibilities'.¹¹ From this perspective, dual loyalty and the potential for conflicting interests are risks that all medical practitioners should be aware of. However, the dual loyalty encountered by military medical officers is arguably different to that faced by other medical professionals due to their ethical obligations as military officers.

Military personnel must adhere to specific ethical, legal and training obligations that can be broadly attributed to the profession of arms. In general, such professional obligations are created for military personnel 'out of the oath of service taken by them, out of the general mission of military forces and out of the command structure of those military forces, which has been established in order to better fulfill the overall mission of the defense forces'.¹² This separate ethical framework is central to the dual loyalty of military medicine. It arguably further complicates it compared to the dual loyalty encountered in other medical fields. This specific dual loyalty is likely recognised within the militaries in which it occurs. Madden and Carter reflect that US Military Medical Officers 'are known (with some justification) for their less than ideal military appearance and relaxed view of military relationships and attitudes. This relaxed view is accepted because what the warrior wants to be sure of is that the physician is competent as a physician'.⁸ Military dual loyalty can also be

characterised by an expectation of military medicine to consider clinical benefits for individual patients and groups of military personnel.

The potential for military medicine to benefit both individuals and groups of military personnel is another contributing factor to its unique dual loyalty. Namely, this encompasses whether military medical officers should place individual patient interests over a group of personnel and vice versa. Benatar and Upshur explore two methods to think this through: 'One way is to insist on the absoluteness, with no latitude in how these are applied contextually, and on the priority of the individual over society at all costs. Alternatively, we can agree that moral reasoning is required in the application of universal principles and that although the priority of individuals is necessary, it is not always a sufficient ethical guide when the common military good or common good is seriously threatened.'¹³ Clearly, there are situations in which military medical officers should preference their medical profession through individual patient care. However, there may also be situations in which military medical officers place a collective benefit to a group of personnel over the individual care of their patients. This is arguably different from the collective benefits attained by public health physicians due to the military frameworks by which military medical officers are bound and their positioning within military chains of command. For a military medical officer, determining whether they are acting in the interests of an individual patient or for the collective benefit of a group can potentially be further complicated by the risk of receiving orders in opposition to their medical profession.

Military orders that are in opposition to military medical officers' professional obligations have the potential to create both a personal risk to them and a professional risk to their medical practice. Howe considers one such case in which a US Military surgeon was ordered to withhold treatment from a wounded enemy soldier to provide care to a US soldier who was arriving later.¹⁴ Howe recounts that 'the military physician who reported this case did not wait for the US soldier to arrive. He defied the direction of his superior and operated on the patient then before him. He did not say what happened to the US soldier and no one asked'.¹⁴ The personal and professional consequences of such orders are arguably unique to militaries and contrast the dual loyalty encountered by military medical officers against that of other medical fields. By serving in a military chain of command, ADF Medical Officers may receive an order that is in opposition with their medical obligations, complicating the frameworks in which they usually practice. Overall, the dual loyalty

encountered by ADF Medical Officers raises broader questions for their practice and Australian Military healthcare on the whole.

There are likely further opportunities to explore dual loyalty specifically encountered by ADF Medical Officers. Further research could focus on quantifying the experience of dual loyalty by ADF Medical Officers and the perceived or realised implications it has had for their medical practice. Further research could also focus on how civilian organisations such as AHPRA and Australian Medical Defence Organisations perceive and manage the dual loyalty encountered by ADF Medical Officers during both their domestic and international practice. Finally, military-specific dual loyalty may be encountered by Australian Defence Force Nursing Officers, allied health professionals and medics. Further research could consider whether military-specific dual loyalty affects the frameworks in which these professions practice military healthcare and subsequent interactions with their respective civilian regulatory and insurance organisations.

Conclusion

Australian Defence Force Medical Officers concurrently practice their military and medical professions. Specific frameworks through which they practice often rightly preference their medical profession during regular practice and international armed conflict. These frameworks include their registration requirements through AHPRA, their obligations to individual patients under Australian Health Law and their non-combatant status through International Humanitarian Law (IHL). The Australian *Criminal Code Act 1995* and IHL also necessitate that

they ensure a generally accepted medical standard is applied when treating detained persons. While these frameworks prefer the medical profession, their application is likely rendered more complex by the dual loyalty of military medicine. This dual loyalty is likely different to that encountered in other medical fields. Its potential extent and impact likely warrant further research specific to ADF Medical Officers, the frameworks in which they practice and the civilian organisations with which they interact.

Conflict of Interest

The author is a serving member of the Royal Australian Navy. He receives remuneration from the Navy and university funding through the Navy's Graduate Medical Program. The opinions expressed herein are those solely of the author and do not reflect those of the Australian Defence Force or the Department of Defence.

Acknowledgements

Ms Rachel Ibbotson BIR, LLB (Hons) provided guidance on legal concepts.

Thank you to Ms Morgan Spinks for her support throughout the authorship process.

Thank you to the anonymous reviewers for their time and guidance during the editing process.

Corresponding Author: Matthew Vinson,
Matthew.Vinson@anu.edu.au

Authors: M Vinson¹

Author Affiliations:

1 Australian National University Medical School

References

1. Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I). International Committee of the Red Cross (ICRC); 1977 June 8.
2. Solis G.D. The Law of Armed Conflict: International Humanitarian Law in War. New York: Cambridge University Press; 2012.
3. *Criminal Code Act 1995* (Cth.) Section 268.95.
4. Arnold R. The liability of civilians under international humanitarian law's war crimes provisions. *Yearbook of International Humanitarian Law*. 2002;5:344-59.
5. White B, McDonald F, Willmott L. Health Law in Australia 3rd Edition. Sydney, NSW: Thompson Reuters (Professional) Australia Limited; 2018.
6. Tickner K. Rogers v Whitaker—Giving Patients a Meaningful Choice. *Oxford Journal of Legal Studies*. 1995;15(1):109-18.
7. Sidel VW, Levy BS. Physician-Soldier: A Moral Dilemma? In: Beam TE, Sparacino LR, Pellegrino ED, Hartle AE, Howe EG, editors. *Military Medical Ethics Volume 1*. Washington DC: Office of The Surgeon General at TMM Publications; 2003.

8. Madden W, Carter BS. Physician-Soldier: A Moral Profession In: Beam TE, Sparacino LR, Pellegrino ED, Hartle AE, Howe EG, editors. *Military Medical Ethics Volume 1*. Washington DC Office of The Surgeon General at TMM Publications; 2003.
9. British Medical Association. *Ethical decision-making for doctors in the armed forces: a tool kit*. London: British Medical Association; 2012.
10. Pont J, Stöver H, Wolff H. Dual Loyalty in Prison Health Care. *American Journal of Public Health*. 2012;102(3):475-80.
11. The Royal Australasian College of Physicians. *Ethical Guidelines for Occupational and Environmental Physicians*. Sydney, NSW: The Royal Australasian College of Physicians; 2016.
12. Coleman S. *Military Ethics: An Introduction with Case Studies*. Oxford, UK: Oxford University Press; 2013.
13. Benatar SR, Upshur REG. Dual Loyalty of Physicians in the Military and in Civilian Life. *American Journal of Public Health*. 2008;98(12):2161-7.
14. Howe EG. When, If Ever, Should Military Physicians Violate a Military Order to Give Medical Obligations Higher Priority? *Military Medicine*. 2015;180(11):1118-9.

A case for employing DEXA for health monitoring and injury prevention in the ADF

CAPT Angela Uphill^{1,2}

¹ Australian Defence Force, Swanbourne, Australia

² Edith Cowan University, Joondalup, Australia

No consent to publish abstract

Biography:

CAPT Angela Uphill has been an Army Physiotherapist in the Regular and Reserve Army for over 17 years.

She is currently working in SOCOMD Human Performance and is completing her PhD investigating the health and performance consequences of Australian Special Forces selection and training courses.

A Journey to Trauma Verification with the Royal Australasian College of Surgeons

Dr Julian Williams¹, Lieutenant Colonel Anna Reinhardt¹

¹ Army, Australia

No consent to publish abstract

Biography:

LIEUTENANT COLONEL ANNA REINHARDT,
Commanding Officer 2nd Health Battalion

Lieutenant Colonel Reinhardt is a broadly skilled General Service Officer who has benefited from diversity of regimental, command, operations, training and staff opportunities. Her career appointments have spanned a variety of environments within 6th Brigade, 17th Sustainment Brigade, the Australian Defence Force Academy, Headquarters 1st Division, Army Headquarters, Headquarters Joint Logistics Command and Headquarters Joint Health Command. These experiences have provided broad opportunities to lead and work within highly skilled and integrated teams across dynamic settings.

Lieutenant Colonel Reinhardt has overseas and domestic operational experience.

Lieutenant Colonel Reinhardt holds a Bachelor of Arts (Information Systems), a Masters of Military and Defence Studies and a Masters of Health Management. She is a member of the Australasian College of Health Service Managers.

Lieutenant Colonel Reinhardt assumed command of

the 2nd General Health Battalion in January 2020 and is now the inaugural Commanding Officer of the 2nd Health Battalion.

ADF Health Research Framework 2021-25

Dr Michael Drew¹

¹ Department Of Defence - Joint Health Command, Campbell, Australia

Members of the ADF perform a unique role, often in dangerous circumstances, and represent the foundation of Defence's capability. The ADF takes its duty of care to Defence members seriously and their health and wellbeing is a key Defence priority.

As Defence moves to shape, deter and respond to the rapid global changes affecting Australia's interests, the Defence Health System must also display agility and adapt to the future strategic environment and respond to government priorities.

This presentation will provide an overview of the ADF Health Research Framework 2021-25. This Framework marks a new chapter in setting a strategic approach to shaping Defence health research to have the greatest potential to contribute to ADF capability and improved health outcomes for ADF members.

The Framework aims to optimise Australia's relative advantages in health research expertise and infrastructure and outlines a more streamlined and systematic engagement process between Defence and research partners. Implementation of each of the four strategies which underpin the Framework will ensure high quality, relevant and timely research is delivered to optimise ADF capability.

This presentation will also showcase in more detail the first key strategy of the Framework which is the identification of strategic health research priorities. These priority areas will be integral to the future of Defence health research, and research within these priority themes will support the health and wellbeing of ADF members.

Biography:

Dr Michael Drew is the Director of Health Research within Joint Health Command at Defence. In this role he oversees the strategy, governance and partnerships relating to health research as well undertaking and commissioning research that preserves and optimises the health of the Australian Defence Force. Prior to this role, he worked at the Australian Institute of Sport for over a decade in various roles to improve Australian Olympians' health and performance. Prior

to his AIS role, he worked in Private Practice and as a Physiotherapist for the Newcastle Knights. Dr Drew has a Bachelor of Physiotherapy (Honours), Master of Clinical Epidemiology, PhD in Physiotherapy. Dr Drew holds an Adjunct Associate Professor appointment at University of Canberra, is a Fellow of the Australian College of Physiotherapy (by Original Contribution), Fellow of the Australasian Institute of Digital Health, and a Fellow of the Australian Sports Medicine Federation. Dr Drew has been involved in 16 PhD Supervisory Panels across physiotherapy, infectious disease, nutrition, biomechanics, sport science, epidemiology and sports performance. Michael has peer-reviewed over 75 publications and presented over 60 conference presentations including invited/keynote presentations. In 2018, his team received an Australia Day Award for their work in improving athlete health.

Corresponding author name: Michael Drew

Corresponding author email:
michael.drew2@defence.gov.au

ADF students learning Global Health and Global Health Engagement at the US Uniformed Services University of the Health Sciences

Brigadier Michael Reade^{1,2,3,4}, Colonel Paul Byleveld^{3,4}, Dr Lynn Lieberman Lawry⁴, Colonel Brad Boetig⁴

¹ University Of Queensland, Herston, Australia

² Joint Health Command, Canberra, Australia

³ Australian Army, Sydney, Australia

⁴ Uniformed Services University of the Health Sciences, Bethesda, United States of America

The two-year USUHS Graduate Certificate in Global Health and Global Health Engagement via distance learning enrolls over 200 students per year from the U.S. military and international partner countries. Following the trial participation of two candidates in 2019, Australia has now enrolled cohorts of 20 students in 2020 and 13 in 2021, with a further 20 nominated to commence in 2022.

General global health topics covered include International Health Regulations, development economics, maternal and reproductive health, child health, nutrition, global health diplomacy, and an introduction to the role of the military in global health (and how different nations approach this). Complex topics such as female genital mutilation, abortion,

and other serious ethical challenges are discussed. Advanced courses deal with:

- Contemporary and historical examples of Military Global Health Engagement, such as the US Medical Civil Aid Programs during the Vietnam War, engagements in Iraq and Afghanistan, and the evolution of Exercise Pacific Partnership in response to an increasingly sophisticated understanding of what benefits partner nations.
- Public Health Issues of Disasters in Developing Countries, including the role of different responders to disasters and some of the most important public health issues among disaster populations.
- Monitoring and Evaluation methods used by government and non-government organisations involved in aid, development and security co-operation, culminating in writing an M&E plan using “real life” USAID solicitations for international development projects.
- Health Context Analysis, which prepares military health professionals to consider the cumulative influence of socio-cultural background, health culture, determinants of health, and the health system to develop a standardized tool to collect, organise, and interpret information about a specific country or region and to inform global health engagement.

Through participation in discussion groups, ADF students build an international network of military health professional peers that will assist them in postings requiring interactions with partner nations.

The courses are designed so that students complete approximately one module per week. Students read the materials and watch the lectures in their own time, and then convene as a class once per week online (via live video teleconference) for seminars with course faculty and their fellow students. Individual courses may also require discussion board participation, a term paper, and possibly a final exam. Most courses run for 11 weeks. Most live sessions are held on weekday evenings, U.S. Eastern Standard Time, which is mid-morning in eastern Australia.

Ideal ADF candidates will have a strong academic record in previous tertiary studies, some previous experience working in an international environment, and a military posting or career plan that demonstrates likely personal and service benefit from this qualification and professional network. Applications are sought in November – December each year from SERCAT 3-7 members of all ranks

and in all health professions including General Service Officers.

Biography:

Brigadier Reade is an intensivist, anaesthetist, and the Professor of Military Medicine and Surgery at the University of Queensland. He has worked throughout PNG, including the current DFAT-supported project to enhance intensive care in Lae. He is a faculty member in the USUHS Global Health course.

ADDITIONAL SPEAKERS:

Colonel Byleveld is posted to the Directorate of Army Health as Clinical Advisor. He has experience as an Environmental Health Officer in PNG, East Timor, and Banda Aceh. He is a faculty member in the USUHS Global Health course. Dr Byleveld is a specialist in water, sanitation, hygiene, and public health with experience with the ICRC and the UNHCR in Africa, the Middle East, Asia, and the Pacific.

Dr Lieberman Lawry is a physician and epidemiologist at USUHS. She has 28 years experience in disaster response and development. She has worked in more than 24 countries conducting population-based studies and impact evaluations.

Colonel Boetig is Director of the Global Health Program at USUHS, having established this initiative in 2016. A USUHS medical graduate, he continues to work in paediatric medicine in the USAF. He holds an MPH from USUHS and an MA in Strategic Policy from the US Naval War College.

Corresponding author name: Michael Reade

Corresponding author email: m.reade@uq.edu.au

An integrated care approach to support ADF members with complex needs across transition from the military

Ms Kirsty Chapman¹, Dr Charles Betts^{1,2}, Ms Rebecca McFarlane¹, Dr Cameron Korb-wells^{1,2}

¹ National Centre for Veterans' Healthcare, Concord Repatriation General Hospital, Sydney, Australia,

² University of Sydney, Sydney, Australia

The National Centre for Veterans Healthcare (NCVH) at Concord Repatriation General Hospital was established in 2019 and offers a unique integrated case managed model of care for veterans and ADF members with complex care needs. The service incorporates Psychiatry, Drug Health, Pain & Rehabilitation Medicine, along with Clinical

Psychology and a comprehensive allied health team. It is a patient-centred model of care driven by veterans' and members' goals, with embedded telehealth capability and residential accommodation available for those needing to travel for care.

The transition from ADF to civilian health care can be destabilising for separating personnel, with challenges navigating complex care needs across multiple providers. The availability of clinical services to support ADF members across this transition has been identified as an opportunity to better coordinate continuing healthcare supports. Through its multidisciplinary focus and case managed model, the NCVH is well placed to facilitate a less disruptive transition to civilian life for those with some of the highest medical and psychological needs.

The NCVH has, to-date, received referrals for 25 ADF members approaching transition from the military. These referrals have spanned all service branches (11 Army, 11 Navy, 3 Air Force), with the majority of members (76%, n=19) having deployed, with all but one medically separating. Most members were married or in de facto relationships (72%, n=18), which were identified as potential supports over the transition period. The majority of members required care across disciplines for physical, mental and psychosocial health needs. A high burden of chronic pain with multiple musculoskeletal injuries was noted, along with high burdens of mental health diagnoses in these transitioning members. The availability of the NCVH clinical service to support members both in advance and subsequent to transition has supported effective coordination of care and mitigated risks of loss to follow-up through this period.

Biography:

Dr Charles Betts is a consultant psychiatrist with public appointments within Sydney Local Health District in addition to working at St John of God Richmond Hospital. He is a fellow of the Royal Australian and New Zealand College of Psychiatrists.

Dr Betts graduated medical school in 2013 (MBBS, Sydney University) and previously studied at the University of Massachusetts Amherst. He also served five years in the United States Air Force prior to relocating to Australia.

Corresponding author name: Dr Cameron Korb-Wells

Corresponding author email: cameron.korbwells@health.nsw.gov.au

Army Psychology: preparing for Accelerated Warfare and supporting an Army in Motion

Lieutenant Colonel Maureen Montalban¹

¹ Australian Army, Australia

The evolution of the Australian Army Psychology (AAPSYPH) capability for Army has been heavily influenced by the last two decades of high operational tempo, the creation of Joint Health Command (JHC) where Army psychologists have been key clinicians within the Mental Health & Psychology Teams, and external drivers with respect to reforms, reports and recommendations that have squarely put a focus on clinical mental health care; and for very good reason, AAPSYPH has been at the forefront of the provision of mental health care to ADF personnel in the last two decades.

However, AAPSYPH as a capability is at a pivot point. As a capability, we are repositioning ourselves to focus on command decision support and organisational psychology tasks. This is as a result of the 2020 Health Capability Establishment Review (CER) outcomes, the formal sign off of the AAPSYPH capability statement by Director General Future Land Warfare in 2021 and the decision by the Surgeon General Australian Defence Force in 2022 to delineate the services provided by JHC (mental health services) and the single Services (organisational psychology activities).

The role of AAPSYPH has always been to support the warfighter, and we have done so in our long history of service: whether it be ensuring we have selected, recruited and retained the right people for the right jobs, to looking after their mental health and wellbeing to ensure they are 'fit to fight', to ensuring that we help enable Commanders to make the tough decisions. AAPSYPH is posturing itself to be Future Ready, within the context of Accelerated Warfare and Army in Motion by reviewing, re-envisioning and realigning many aspects so that we can provide Army the full suite of tasks outlined in our capability statement. We don't have everything right, right now. But as history has shown, we have continually provided Army and its people what it needs, at that particular point in time and we will continue to do so, now and into the future.

Biography:

Lieutenant Colonel Montalban is an Army psychologist who has worked at the tactical, operational and strategic environment within the Australian Defence Force, providing psychological advice and

interventions to individuals, units and Commanders. She has done so within Australia and on operational deployments to Timor-Leste, the Solomon Islands and the Middle East.

Lieutenant Colonel Montalban has completed her Bachelor of Economics (Social Sciences), Graduate Diploma in Science (Psychology), Graduate Diploma in Public Health, Master of Psychology (Health) and is currently working towards completion of her Doctor of Philosophy at the Research School of Population Health at the Australian National University.

Corresponding author name: Lieutenant Colonel Maureen Montalban

Corresponding author email:
maureen.montalban@defence.gov.au

Attention control training to improve PTSD symptoms for transitioning veterans

Mr Dan Botros¹, Dr Olivia Metcalf², Dr Tracey Varker², Mr Doug Scott¹

¹ Open Arms – Veterans & Families Counselling,
Department of Veterans' Affairs, Australia

² The University of Melbourne, Australia

Altered threat monitoring in military and veteran populations may contribute to the development of mental health issues. A simple computer-based program, known as attention control training, developed in the Israeli Defence Force, has the potential to re-calibrate threat monitoring in veterans before they leave the military and transition to civilian life, in order to improve mental health.

In this pilot randomised controlled trial Australian Defence Force personnel and veterans (N = 59) received four weekly sessions of either attention control training, or a placebo attention training. Participants who received attention control training reported significantly lower levels of PTSD symptoms, anxiety symptoms, and significantly improved work and social functioning. No participants who received attention control training worsened with regard to PTSD symptoms, whereas 23.8% of those who received the placebo attention training experienced an increase. The potential for attention control training, a simple, seven minute computer task, to prevent the development of PTSD is significant, and these preliminary findings are world-first.

The aim of this presentation is to discuss these findings, as well as provide a clinician's experience of recruiting and engaging participants to take

part in attention control training, learnings from the study, and future directions. The majority of participants were veterans who had transitioned within the last 12 months. The main barrier to participation in this trial for ADF personnel was the nature of transition as a busy time, in that members discharging from Defence have multiple other commitments to complete to assist with their ADF transitional requirements. Participation was also hindered by excess travel requirements to complete the trial for members on remote bases, and a lack of understanding around data collection and privacy barriers. The learnings from this preliminary study include the need to consider a 'virtual implementation' of attention training, which would involve delivery to an individual's own computer, as well as deeper integration within the transition space. To validate these preliminary findings, a randomised controlled trial with transitioning personnel is needed.

Biography:

Dan Botros has been employed with Open Arms for 4 years and held multiples positions across the organisation including acting Director of Transitioning Members (DVA), Acting Regional Director Vic/TAS, Group Programs Coordinator and currently is employed as the Assistant Director of Clinical Outreach and Group programs across Victoria and Tasmania. Dan has 18 years' experience in a variety of private and corporate organisational psychology positions including youth mental health services, Security industries, Correctional Centres, Petroleum Off-shore Company, and the Australian Defence Force. Dan is currently a Royal Australian Air Force Specialist Reservist Organisational Psychologist and board approved psychology supervisor. Dan was engaged as a research assistant to implement the Open Arms and Phoenix Australia SOAR research trial.

Dr Olivia Metcalf is a behavioural scientist who specialises in digital mental health and trauma-affected populations. Olivia is interested in leveraging technology, including wearables and smartphones, in assessing and treating mental health problems that can result after trauma, including PTSD, addiction, and problem anger. She has been researching novel ways to treat common mental health issues in veteran and military populations for the past nine years. Olivia has expertise in experimental research and as a clinical trial methodologist.

Corresponding author name: Dr Olivia Metcalf

Corresponding author email:
olivia.metcalf@unimelb.edu.au

Aural Barotrauma in ADF Diver Trainees

Associate Professor Dale Edwards¹, Mr Peter Gough^{1,2}, [LCDR Jason Watterson^{1,2}](#)

¹ University of Tasmania, Australia

² Royal Australian Navy,

No consent to publish abstract

Biography:

POMED Peter Gough is a graduate of the Bachelor of Paramedic Practice (ADF Conversion) which comprises part of the Navy Clinical Manager Course and is also an Underwater Medic. Since graduating PO Gough has enrolled in the Bachelor of Paramedic Practice (Honours) research degree and has been investigating the incidence of Aural Barotrauma in ADF divers.

Corresponding author name: Dale Edwards

Corresponding author email:
dale.edwards@utas.edu.au

Australian Defence Force - Defence Health System Assurance

[Lieutenant Colonel Fred Parker¹](#)

¹ Joint Health Command, Australia

The Defence Health System (DHS) is a complex array of consumers, providers, services, stakeholders, locations, contexts and governance responsibilities. Articulating the health of this complex system and its ability to generate and sustain directed health capability effects is a significant task. This is made all the more challenging as not all elements of this array are under the direct control of the Surgeon General Australian Defence Force (SGADF).

The approach to DHS assurance requires a broad view and understanding of that complexity and of the levers available to influence and govern it. Application of a comprehensive assurance framework requires collaboration, cooperation and buy-in from all stakeholders.

Generating and sustaining required health capability and capacity is dependent on integrating, coordinating and managing a range of fundamental capability inputs, ensuring they are delivered in required state, quantities, characteristics, timescales and tempo needed for the required effects.

The ADF Health Strategy (the Strategy) identified that a health system assurance function would be an appropriate mechanism by which the SGADF would

apply guidance and technical authority through Defence health across key operating contexts of garrison, deployed and civilian influences.

The DHS assurance framework articulates how Health Strategy Office (HSO) will, in combination and coordination with existing audit and governance programs of the services and groups, provide positive systems wide assurance that Defence health capability is fit for purpose, ready to deliver, responsive to change and resilient in facing challenges.

Biography:

Lieutenant Colonel Fred Parker is a General Service Officer within the Royal Australian Army Medical Corps. On completion of university in Sydney he graduated as a Registered Nurse. Following a few years employed in acute care environments, he joined the Army 'just to have a look'. Over the last 28 years, he has undertaken variety of appointments across all military environments. He is currently the Deputy Director, Health Strategy Office at Joint Health Command

Corresponding author name: Dr Anna Samson

Corresponding author email:
anna.samson1@defence.gov.au

Bruxism in military members – misconceptions and occupationally centred considerations in management

Jessica Kuk

Recognising the controversies and contention about bruxism, this presentation aims to identify and dispel misconceptions about its diagnosis, clinical consequences and associated disorders by drawing from current literature. It discusses important considerations of patient factors within the military population in order to provide appropriate patient centred care.

Patients presenting to the dentist frequently report grinding of teeth at night. This is often accompanied or preceded by reports of jaw joint and muscle pain, headaches and tooth wear. Historically, within the Defence population, there is an almost reflexive treatment to provide an occlusal splint or a 'nightguard' without further investigation or review. Unsurprisingly, patient compliance and success are either poor or unknown. Indeed, this is not always appropriate treatment and may even leave other associated conditions undiagnosed and untreated.

In some cases, the provision of a nightguard can cause further detriment.

In order to appropriately manage presentations of reported bruxism and its accompanying complaints, the dental practitioner must conduct accurate history taking and investigation. This should involve discussions and questions about any pain, parafunctional habits, psychosocial stressors and general health and wellness. In some cases, it may warrant collaboration with other health practitioners. Understanding the individual's military context, the lifestyle of the Defence member and its influence on these factors is crucial to comprehensively colour the presenting picture. Greater appreciation of these patient factors, facilitates provision of patient centred, holistic and where necessary, multi-disciplinary care.

There may be challenges in providing this care within the military context such as practitioner education, resource availability, environmental factors, availability to attend appointments and requirement to remain dentally and medically fit to deploy in accordance with conditions stipulated by Defence Health Policy. The practitioner's understanding of these challenges facilitates successful navigation and ultimately leads to better patient outcomes and ideally reduced risk of dental casualties and maintenance of capability.

In the current climate where retention of capability is a priority, the dental practitioner has a responsibility to empathetically deliver care to increase patient satisfaction and prevent deterioration of oral health that may hamper dental readiness– that is, healthcare to ensure members are Fit to Bite, Fit to Fight.

Biography:

LCDR Jessica Kuk joined the RAN as an undergraduate dentist studying at University of Adelaide. She began her Naval dental career in WA, prior to serving as a Fleet Mobile Dental Officer on multiple platforms. LCDR Kuk is currently enjoying her posting to HMAS Cairns, providing dental support to crews of hydrographic survey and patrol vessels, whilst studying a Master of Science in Medicine (Pain Management) Orofacial Pain. Through her further study, LCDR Kuk continues to develop interest in delivering evidence based, patient centred care within the military context.

Corresponding author name: Jessica Kuk

Corresponding author email: kukjessica@gmail.com

Co-Designed and Peer Led Programs

Mr Matt Newlands¹, Dr Jonathan Lane

¹ Military & Emergency Services Health Australia, Adelaide, Australia

The lack of cultural competence of frontline and military health service providers is considered a barrier to accessing and remaining in care, especially mental health services. This is particularly relevant to individuals with a strong service identity which is inherently shaped by the training they receive, their experiences on deployment and the norms, traditions and values of their service culture.

The presentation will provide an overview of three unique programs co-designed and delivered by Lived Experience Service Peers which are successfully breaking down these help-seeking barriers. These three programs: "Group Emotional And Relationship Skills" (GEARS), "MindRight" & "StoryRight" provide a transdiagnostic, skills-based approach to mental health aimed at providing service personnel with the skills and knowledge to monitor, address and manage what is within their own control. All of these programs are delivered by supervised lived experience peers with the cultural expertise and the credibility to role model functional recovery, thus improving content and skills uptake. Facilitators are trained using a 'train the trainer' model of participation, observation, and gradual increase of responsibility for delivery, whilst receiving formal clinical training and are provided with high level clinical oversight.

All three programs provided by Military and Emergency Services Health Australian are providing a renewed sense of purpose and meaning for Frontline and Military personnel nationally through the application of relevant service-related skills and experience to assist peers in their journey of recovery and/or growth.

Biography:

Matt is a husband and father with 10 years-service with South Australia Police (2006 – 2016). Having been diagnosed with PTSD and depression in 2015, Matt fought a personal battle with suicidal thoughts and refusal of his diagnosis resulting in the destruction of his personal life and the end of his Policing career in very dramatic circumstances.

Matt spent the following years learning strategies and tools to optimise and maintain his wellbeing before turning his attention to supporting other military and first responders.

Matt is now the Lived Experience Stakeholder Engagement Manager and Program Manager for Military and Emergency Services Health Australia; and is also a qualified counsellor, peer work consultant, program facilitator and volunteers as a national Community Ambassador for RUOK?

Corresponding author name: Jonathan Lane

Corresponding author email:
jlane@mesha.org.au

Damage Control Resuscitation - are we missing the POInT?

Dr Andrew Cahill¹

¹ Australian Army, Australia

Effective Damage Control Resuscitation (DCR) involves the principles of permissive hypotension, damage control surgery and haemostatic resuscitation. The availability of appropriate blood products in austere, resource-limited and complex prehospital environments is a critical vulnerability to adequate resuscitation. In the military context, operational constraints such as logistic resupply limitations, cold chain compliance, tactical signature, and equipment manoeuvrability may additionally restrict availability. The paucity of blood product redundancy requires an operational solution.

The Point Of Injury Transfusion (POInT) program is a proposal to enable fresh whole blood to be available and utilised in extreme circumstances where commercial blood product components are depleted or logistically untenable. The proposal closely aligns with established programs in coalition militaries by paralleling the use of pre-screened pre-identified ADF donors to avail Low Titre Group O Whole Blood (LTOWB) to casualties in haemorrhagic shock.

The Committee on Tactical Combat Casualty Care (CoTCCC), in its 2020 amendment to the TCCC guidelines, removed crystalloid therapy as a resuscitation fluid of choice option for casualties in haemorrhagic shock. As a result, ADF Medical Technicians, often the most proximate clinician to the point of injury, do not routinely carry any of the resuscitation fluids recommended to treat trauma casualties in haemorrhagic shock. To address this deficit, the POInT proposal offers a formalised means of sourcing and transfusing LTOWB at the point of injury.

The key elements of the POInT proposal can be discussed as three phases: approval, pre-deployment and deployment considerations. Firstly, as LTOWB is currently not commercially available in Australia,

an appropriate proof of concept, with national and Defence legislative compliance and relevant health policy review is required for approval. Secondly, the pre-deployment processes involve identifying low titre Group O donors within the deploying force, scheduled screening for transfusion transmissible diseases, ensuring equipment familiarisation, training donors and clinicians on the procedure as a battle drill, and outlining the strict clinical governance requirements regarding blood product handling and use. Thirdly, deployment considerations include personnel planning, the utility of pre-mission collections, coalition interoperability and the tactical donation and administration procedure.

Examples of LTOWB transfusions in austere, remote, and operational conflict settings have been increasingly documented. Whilst domestically screened blood components remain sourced as first line products, redundancy options when operational constraints prevent such availability should be considered; mission success and casualty survivability may depend on this. Articulated in this introductory proposal, the POInT program may deliver, in extremis, whole blood critical for damage control resuscitation far forward to support ADF operations.

Biography:

Major Cahill is an Army Medical Officer, currently completing a clinical year in Acute Medicine at John Hunter Hospital. Commissioning in 2011, he has had sequential postings to operational units in the Australian Army and has international and domestic operational experience as a Regimental Medical Officer.

Major Cahill is a Fellow of the Royal Australian College of General Practitioners, a Defence Aviation Medical Officer and enrolled in Master of Medicine (Critical Care Medicine).

Corresponding author name: Andrew Cahill

Corresponding author email:
andrew.cahill@defence.gov.au

Environmental exposures on deployment and reproductive health: What's the deal, baby?

Dr Rachelle Warner^{1,2}, Dr Jodie Avery^{1,2}, Associate Professor Susan Neuhaus¹, Professor Michael Davies^{1,2}

¹ University of Adelaide, Australia

² Robinson Research Institute, Adelaide, Australia

Military personnel deployed on operations may encounter a variety of hazards with the capacity to adversely affect reproductive health. This paper investigates the association between self-reported exposure to reproductive toxicants and adverse pregnancy outcomes in Australian Defence Force veterans who deployed to Iraq and Afghanistan during the period 2001–2009. Utilising the Middle East Area of Operations (MEAO) Census Study data set, descriptive analyses of participants' self-reported exposure were compared with the occupational environmental monitoring data taken at their reported deployment location. Univariate analyses assessed the significance of unadjusted associations between self-reported exposures and reproductive outcomes. Overall, self-reported adverse reproductive outcomes were significantly increased in veterans who deployed to both Afghanistan and Iraq ($p = 0.04$) compared to those who only deployed to only one of those locations; particularly in women ($p = 0.009$). Miscarriage was the most likely of these ($p = 0.008$). These figures would benefit from being confirmed against medical records but are worthy of further study. In this historical cohort study, causal inference cannot be made due to absence of control groups to exclude sources of potential bias. Imprecision in the assessment of environmental hazards in the MEAO and other methodological constraints make it impossible to calculate precise estimates of risk. The results warrant continued investigation, especially when combined with previous findings related to pregnancy outcomes in this population, the importance of reproductive outcomes, and the potential emergence of new hazards.

Biography:

Rachelle Bonner joined the public service as a multitasking ninja, and that pretty much describes her career to date. She has deployed into the Middle East, Iraq and the Philippines, and has some experience in international and operations law, including undertaking health threat risk assessments of new weaponry. Fuelled mostly by caffeine and dogs, she is also a certified geek with a PhD in Reproductive

Medicine, designs and makes wedding accessories for pets and cosplay props, and is an expert procrastinator.

Corresponding author name: Rachelle Warner

Corresponding author email:
rachelle.warner@adelaide.edu.au

Every doctor a trauma practitioner: clinical immersion as a pathway to operational clinical readiness for general duties medical officers

Major Adam Mahoney¹, Major Kyle Bender

¹ Australian Army, Hobart, Australia

The ADF expects a great deal from its generalist medical practitioners on operations. Preservation of the deployed force requires that medical officers are experts in primary care and occupational medicine. Accordingly, when not deployed, most full-time ADF medical officers augment the experience gained in garrison health support by engaging in clinical placements in general practice or civilian emergency departments. This model of learning produces broadly skilled medical officers well equipped to meet the needs of disease non-battle casualties.

But what about trauma? Australian service members deploy on operations confident in the expectation that, if they are wounded, they will receive best-practice trauma care. In recent years, work has begun on an Operational Clinical Skill Set (OCSS) for deployed general surgeons, recognising the growing gap between military and civilian practice. Likewise, it has been recognised by many authors that routine civilian clinical activity offers variable exposure to the situations surgeons may encounter in the field; there is a need for a purposeful approach to learning – an Operational Clinical Readiness Pathway (OCRCP). This is equally the case for generalist medical officers. Civilian primary care and emergency department placements do not offer the concentrated experience of in-hospital trauma management necessary to allow non-specialists to care for injured soldiers in the wards, or while awaiting evacuation and onward movement.

In this presentation, we propose a pilot program in which general duties medical officers are offered the opportunity to be embedded within an admitting trauma unit for a period of four weeks. This period of clinical immersion will enable attainment of pre-defined learning objectives centring on the knowledge and skills required to provide comprehensive medical

care to trauma casualties in the period following initial resuscitation and damage control surgery. Key competences would include tertiary survey completion, prevention and recognition of common complications of trauma, and understanding the role of nursing and allied health specialists in trauma care. If successful, we hope to expand the program to include other military health disciplines, acknowledging that it is the entire healthcare team, not isolated experts, who support optimal function of the deployed trauma system. Ultimately, we believe that trauma clinical immersion can emerge as one of many learning experiences within an OCRCP that will allow every serving doctor to be a confident and competent trauma clinician.

Biography:

Major Mahoney is an anaesthetist and intensive care registrar in the ADF Medical Specialist Program seconded to the Royal Hobart Hospital where he is also the Director of Trauma. He has research interests in military medical education and trauma epidemiology.

Corresponding author name: Adam Mahoney

Corresponding author email:
adam.mahoney@defence.gov.au

Experiences from a Medical Technicians perspective during Middle East region draw down - preparation, training and future planning.

CPL Allana Smith¹

¹ Australian Defence Force, Enoggera, Australia

Al Minhad Air Base, Camp Baird, is a Coalition Military facility accommodating multi-national personnel who together support military personnel operating within the Middle East region (MER). Headquarters Middle East exercises command and control of deployed ADF units in the MER through Op Accordion. Op Accordion enables contingency planning and enhancement of regional relationships in the MER by providing communications, force support, airbase operations and health care. Camp Baird has been the home to thousands of soldiers, sailors and airmen and women over the past two decades however in the last six months has undergone a substantial decrease of personnel. This draw down process has led to large teams being reduced considerably.

The AMAB Health facility is currently responsible for the health care of ADF personnel both in location and within the greater MER. The purpose of this presentation is to outline the different roles and responsibilities of an Australian medical technician in a coalition medical facility prior to, during and post the draw down process. Additionally this presentation will outline future planning for a medical facility when expansion is required to support a larger number of personnel.

Lastly, this presentation will detail the improvements to training required by medical technicians prior to deploying to a non-warlike environment. This includes the upskilling of medical technicians to perform more advanced medical procedures, AME responsibilities and administrative roles.

This presentation will expand on the following points:

1. Preparation and pre-deployment training for medical technicians
2. The roles and responsibilities expected of a medical technician
3. Overview of injury patterns, patient presentation and management
4. General staffing, layout and services available in the AMAB Medical facility
5. Different standards in training and treatment between different coalition forces
6. Improvements in training inclusive of specific training deemed pertinent for a medical technician prior to deployment in non-warlike environments.

The presenter will cover topics mentioned above during the presentation. They will outline the importance for improvement in pre-deployment training for a Medical Technician and how best we prepare ADF medical personnel for changes in circumstances on operations. This information is especially relevant as their role both nationally and internationally is constantly transforming. The threats to coalition personnel are rarely consistent; therefore, in order to be ready for the next mission, Medical Technicians need to be adaptable and prepared.

Biography:

CPL Allana Smith enlisted into the Australian Regular Army in the Royal Australian Medical Corp as a Medical Technician on 24 February 2014.

On the completion of the Australian Defence Force Medical Course CPL Smith was posted to the 1st Close Health Battalion based in Darwin, Northern Territory.

She deployed with 1st Battalion Royal Australian Regiment on Operation AUGURY to the Philippines in 2018. During this posting she completed Subject 1 Corporal Course and subsequently promoted to Corporal in 2019.

CPL Smith then posted to the 2nd General Health Battalion Brisbane, Queensland, now 2nd Health Battalion in January 2020, where she deployed to Operation ACCORDION in the United Arab Emirates in 2021.

CPL Smith has been awarded the Australian Operational Service Medal, Australian Operational Service badge, Australian Defence medal, Philippines Military Merit Medal and Australia Day Medallion.

CPL Smith grew up in Glenelg, South Australia where her parents and younger brother reside. She has a keen interest in sport and plays Netball, Tennis and Australian Rules Football.

Corresponding author name: Allana Smith

Corresponding author email:
allana.smith@defence.gov.au

Forward Medicine Competition for Defence Health Personnel

Stewart Robertson¹

1 Army, Sandringham, Australia

In the past, the Royal Australian Army Medical Corp has conducted clinically focussed and driven inter-unit competitions, the Cerliter and First Aid in particular to build spirit-de-corp and a competitive culture within and across health units/sub units. The competitions at the time provided sub-units with the opportunity to strive for excellence in the provision of forward medical care in a simulated field environment. Due to operational tempo requirements and incremental training liabilities, Army wide inter-unit competitions in health units have ceased to exist and have not been conducted over an extended period of time.

The Forward Medicine competition will be a premier event to test the skills and prowess of teams of Health personnel from across the country. The event/activity is designed to test the Tactical Combat Casualty skill set over a wide variety of tactical medicine components. Teams will be faced with a Full Mission Profile scenario that will play over a series of phases, with each phase, the scenario will unfold a little further. The overall scenario will be physically demanding and teams should be prepared for exertion over an extended period. Teams will

have the opportunity to challenge themselves, push themselves hard, and excel beyond any obstacles they face.

The Forward Medicine Competition (FMC) should be considered a high yield solution to cement Tactical Medicine as the centre of health training excellence and reinforce the Medical Technician brand and to set the standard for clinical training and commensurate with our coalition partners

The Global War On Terror seen a period of intensive kinetic operations, health training must not lose the momentum gained and should continue to focus the training of health personnel, in particular Medical Technicians, in the forward space to maintain “core combat and operational behaviours”. The centrepiece for these behaviours is Tactical Combat Casualty Care principles that encompass Point of Injury Care, stabilisation, prolonged field care and the rapid and effective evacuation to the appropriate Medical Treatment facility.

With the new Army Health reformation structure with four integrated elements that have distinct identities, the activity could serve as a great opportunity to build unit cohesion, dare say it rivalry and a pride in unit capability. Furthermore, the advent of JMED course, there is no reason why this competition could not eventually incorporate Medical Technicians from across the three services.

The development of the event/competition could also lead to the establishment of an Australian version of the American Expert Field Medical Badge. Recognition of the skills of a tactical medical capability is something we should continue to invest in, support and reward.

Biography:

Major Robertson has served in Army Health Services for more than 30 years firstly as a Medic and then commissioned for the last 10 years. He has been deployed overseas and domestically, and has had a variety of postings in Close Health and Trg environments.

Corresponding author name: Stewart Robertson

Corresponding author email:
stewart-robertson@outlook.com

From Defence to DVA Care – Safe passage for improved health and wellbeing

Professor Jenny Firman¹, Dr Fletcher Davies¹

1 Department of Veterans' Affairs, Canberra, Australia

2 Department of Defence, Canberra, Australia

Defence and DVA continue to forge closer connections to improve healthcare and support for Defence members as they make the journey from military service to civilian life.

We know that transition can be a stressful period and that transitioning members will often seek the advice of the healthcare team to help them navigate this process successfully

This presentation will consider the journey of a transitioning Defence member including the potential impacts of any early injuries while still in service, through to transition and beyond into civilian life as a veteran receiving support from DVA.

Why do we encourage planning for transition well before the date? What is the role of the health professional in this claims process and what can you recommend to your transitioning patients to assist them?

The panel of Defence and DVA representatives will provide answers to these questions and others, and use case studies to explore the issues. We will discuss the medical separation process, GP referrals, Defence and DVA support services, and the process for compensation claims, which are required to activate some of these supports.

We will help to demystify the claims process and provide insights about how healthcare professionals can best support a swift and efficient passage of claims, while minimising unnecessary paperwork. And we will dispel the myth that healthcare professionals need a detailed understanding of the complex Acts that define compensation and rather focus on the importance that clinical knowledge and expertise brings to the claims process.

DVA will highlight the health-based initiatives in place to ensure transitioned members and veterans can receive the health treatments and services they need, even if their claims have not yet been finalised.

Defence will outline the support available to transitioning members both from within health and more broadly across Defence.

Attendees will gain important insights about the transition process and their role in helping members

have a positive transition experience and enter civilian life better prepared for lifelong health and wellbeing.

Biography:

Professor Jenny Firman AM completed her medical degree at University of Melbourne and while a student joined the Royal Australian Navy. Over the next 22 years of full time service, she was posted to a range of positions in Navy and ADF. She transitioned to the Navy Reserves in 2002 and in February 2015 was promoted to Rear Admiral and appointed as Surgeon General Australian Defence Force Reserve.

After a decade in the Australian Government Department of Health working on communicable diseases and health emergencies, she was appointed as the Chief Health Officer in DVA in 2019.

In July 2020 she was appointed as an Honorary Professor at the Australian National University in the College of Health and Medicine and in 2021 was honoured to be appointed as a Member of the Order of Australia in the Military Division for her exceptional performance of duty in the field of military medicine.

Dr Fletcher Davies completed his medical degree at the University of Adelaide and spent the next 15 years working in acute hospital medicine throughout South Australia and Victoria. After completing Masters Degrees in Public Health and Healthcare Management, he joined DVA in 2013.

While at DVA, he has contributed to the design of the current claims processing IT system, rationalisation of provider-facing paperwork, the development of a governance framework for clinical advisers, and the implementation of an assertive case management program for vulnerable veterans. He has been in the role of Principal Medical Adviser - Compensation since 2019.

Corresponding author name: Jenny Firman

Corresponding author email:
jenny.firman@dva.gov.au

Future Maritime Warfare Medical Considerations - Trauma Systems, Workforce and Interoperability

Dr Luke Edwards¹

¹ Royal Australian Navy, Sydney, Australia

Recently delivered to the RIMPAC22 Medical Symposium the presentation aims to discuss, analyse and provide perspectives on future military medical considerations by reviewing the historical context &

injury patterns present in the maritime environment; modern trauma curves, interventions and treatment liabilities. This baseline is then developed for application to the current and likely near-future battlespace. In discussing interoperability as a key foundation to warlike joint trauma systems capability an overview of mobilisation, training & workforce dilemmas of maritime medical enablers will then be made. An expanded discussion on the interoperability spectrum and aims for its future use will conclude the presentation.

Biography:

CMDR Luke Edwards is the current Royal Australian Navy (RAN) Fleet Medical Officer; Australia's delegated technical authority for the provision of military maritime healthcare. He is a primary care specialist with post graduate qualifications and training in aerospace medicine, underwater medicine, medical administration and is a 2019 graduate of Australian Command and Staff Course. He has served across the majority platform types and operational contexts across the navy and wider Australian Defence Force enterprise.

Group Emotional And Relationship Skills (GEARS): A culturally informed, peer led, transdiagnostic psychoeducation and skills-based group intervention with military, veterans and emergency services personnel

Dr Jonathan Lane^{1,2}

¹ Military and Emergency Services Health Australia (MESHA), Parkville, Australia

² University of Tasmania, Hobart, Australia

Introduction: The Group Emotional And Relationship Skills (GEARS) program is being delivered in Adelaide and Hobart by lived experience facilitators for military, veteran and first responder (MVFR) personnel with stress and trauma conditions. The manualised 12-week program is adjunctive to normal mental health (MH) care in that it is community based and aimed at psychoeducation and skills for stabilisation and recovery from a transdiagnostic perspective. It also unique in the way in which it is culturally specific and delivered by peers. This presentation will describe the preliminary clinical outcomes of the program evaluation (DDVA271-20) to date.

Methods: The MVFR participants' individual pre- and post-program primary clinical outcomes of psychological distress (K-10); Depression (PHQ-9);

Anxiety (GAD-7); Anger (DAR-5); post-traumatic stress disorder (PTSD) (PCL) scores; Insomnia Severity Index (ISI); Resilience (BRS) and Disability (SDS) will be discussed. Emotional Regulation (ER), as measured by the Dimensions of Emotional Regulation Scale (DERS-SF), is hypothesised to be strongly associated with all outcomes.

Results: The individual results from participants (N=58 as at the time of this abstract) who have completed the program demonstrate statistically significant pre-post changes on all measures except resilience and disruption to work. There is a strong association between ER and all measures, suggesting that ER skills moderate symptoms of psychological distress and therefore ER is a key skill for stabilisation and functioning.

Conclusion: Emotional dysregulation underlies many of the symptoms of psychological distress in the MVFR population. Per led transdiagnostic psychoeducation and skills-based stabilisation programs for stress and trauma disorders are both novel and potentially effective programs to support clinical treatment. This is particularly relevant for MVFR populations due to the high occupational risk for these conditions.

Biography:

Dr Lane, FRANZCP, MBBS (Hons), has been in the Army for over 30 years and an Afghanistan veteran. He is completing a PhD developing and evaluating the effectiveness of skills-based interventions for mental health problems for military, veterans, police and emergency services personnel. He is the Psychiatry Lead for the University of Tasmania School of Medicine; the lived experience clinician for Military and Emergency Services Health Australia (MESHA); and consults for the Department of Veteran's Affairs (DVA), Tasmania Police, the Australian Defence Force (ADF); a member of advisory boards for Veterans for Tasmania and DVA; was the Coach of the Australian Invictus team for archery in 2018 and 2022; and a Churchill Fellow. He has been an invited speaker and presented at a wide range of clinical and educational conferences both internationally and in Australia due to his expertise in the field of military, veteran, and emergency services mental health. His passion is advocating for, and implementing, culturally informed and peer-led interventions that have functional outcomes. He was awarded the inaugural 2019 Society for Mental Health Research lived experience research medal for his work.

Corresponding author name: Dr Jonathan Lane

Corresponding author email: jlane@mesha.org.au

Haemostatic resuscitation in practice – an analysis of blood products administered during Op HERRICK, Afghanistan

Lieutenant Colonel Rhys Davies¹, Major James Thompson¹, Ms Ruth McGuire², Major Stacey Webster¹, Surgeon Captain Jason Smith¹, Colonel Tom Woolley¹

¹ Defence Medical Services, United Kingdom

² Defence Science and Technology Laboratory, United Kingdom

No consent to publish abstract

Biography:

Lieutenant Colonel Rhys Davies is a consultant anaesthetist working at the University Hospital Southampton, UK. Alongside major trauma and transfusion, he has a special interest in neuro and vascular anaesthesia.

Corresponding author name: Rhys Davies

Corresponding author email:
rhys.davies@doctors.org.uk

Healing Minds and Bodies. A Holistic Service for Veterans and Serving Members

Dr Gavin Angus-leppan¹, Dr The Chow Chow¹

¹ Ncuh, Concord Hospital, Concord, Sydney, Australia

The unique and complex nature of the veteran's health create major obstacles to establishing wellbeing. This presentation will explore our experiences at The National Centre for Veterans Health Care with veterans and serving members suffering physical, psychological and substance use issues. This multidisciplinary service offers integrated care from a range of specialties. We discuss two cases which exemplify the challenges arising from interactions between multiple diagnoses, multiple professional stakeholders and multiple therapeutic regimes. Some of the problems we have encountered include overlapping polypharmacy, the stigma of mental health care, the early use of irreversible surgical treatments, psychological blocks to good response to medical treatment and issues around perceived legitimacy of medical complaints in the context of a psychological disorder. We see these issues as particularly pertinent to the areas of pain and trauma.

Arising from experiences, we reflect on the benefits of a multidisciplinary team with regular and efficient communication between its members and of the identification of interactions, both pharmacological and psychosocial. Multiple perspectives on and interactions with patients have yielded a richer understanding and deeper engagement with patients. For instance, a patients increased awareness of the specific and personal meaning and associations of their pain helps disentangle the experience of pain from other issues. The acknowledgement of multiplicity of needs has also fostered a sense of containment and help alleviate the distress of patients troubled by competing issues.

Biography:

Dr Gavin Angus-Leppan is a Psychiatrist with an interest in Psychosomatic Medicine, Trauma and Psychotherapy including EMDR. In addition to working with Veterans, he works at the Aboriginal Medical Service at Redfern.

Dr Angus-Leppan has a background in Psychiatry of Old Age, General Acute Psychiatry and Consultation Liaison Psychiatry in Australia and the UK.

Dr Tze Chow Chow is a Specialist in Pain Medicine and Anaesthesia. He is also a staff specialist and supervisor of trainees at the National Centre for Veterans Healthcare (NCVH).

Dr Chow Chow provides an integrated multidisciplinary pain management approach with clinical precision, early intervention, tailored management plans to provide a refreshing bespoke experience. Majority of his clients include Australia Defence Force (ADF) members with multiple injuries, Veterans with complex trauma and degenerative diseases, patients with widespread pain and psychosocial implications that required pain management consolidation.

His expertise covers most pain conditions like nerve pain, joint pain, spinal back pain, headache and complex regional pain syndrome. He is also specialised in advance pain interventional techniques such as nerve blocks, joint blocks, radiofrequency treatments and spinal cord stimulators.

Corresponding author name: Gavin Angus-Leppan

Corresponding author email:
Gavin.angusleppan@health.nsw.gov.au

Health leadership & Mission Command: is it really rocket surgery?

Dr Steve Adamson¹, Lieutenant Colonel Kelly Dunne¹

¹ Australian Army, Canberra, Australia

The Australian military medical system is complex, comprising garrison operations (the day-to-day health care of ADF personnel), the responsibility to prepare the ADF medically for Operations, and the need to field a broad array of combat-ready medical capabilities. At the same time, the military medical system must maintain functioning links with equally complex external agencies such as the wider Australian health system, the Departments of Health and Veterans Affairs, a large contracted health workforce and, of course, the ADF's war-fighting elements that rely on our support to achieve their mission.

So how do our health leaders navigate this complex web of organisational challenges in an ever changing global and domestic environment? Do we devolve decision making down to the lowest level practical and empower junior leaders and clinicians? Or do we embrace the opposite approach - pushing all decision making and health policy to the very top, to those isolated from the patient and the mission and risk paralysing the health system in the process? I think we intuitively know the answer lies somewhere in between those extremes, but this illustrates a dilemma faced by those in the ADF health system today.

The judicious application of Mission Command in health organisations, has the potential to shift the focus from centralised decision making, to empowered leaders and clinicians at the tactical level who are focused on achieving the mission in line with the Commander's Intent. At its foundation, the idea of mission command recognises that once we move from planning to execution things can and do change. It recognises that the speed of decision making and agility can sometimes be the difference between mission success and mission failure. An equally important concept that underpins Mission Command is that usually, the person best placed to make timely decisions is the one doing the job. A brief analysis of history will show that mission command has and does win wars, but only if the principles are practiced in peacetime too. It is not easy, and will require investment in our junior leaders and increased agility from our senior leaders moving forward.

There is no prescription and no endorsed leadership style – our health leaders will need to adapt, frequently, and sometimes outside of their comfort zone. It is a skill that requires investment and often years of practice. Leadership is hard to get right – it is difficult to be all things to all people when the lens through which we view leadership is subjective and we each have our own opinion of ‘what right looks like’ when it comes to health leadership. But we can and should do more to improve – so as not to fail our junior leaders of the future if/when the flag goes up. Encountering this reality for the first time in “the face of battle” will likely have dire consequences. Preparation for the inevitable demands of this environment should, therefore, start now and, arguably, be built into the “DNA” of our peacetime health systems.

Biography:

Kelly Dunne, CSC, BA, MHM, MMDS, is a Lieutenant Colonel working in the Directorate of Army Health as part of Army Headquarters. She is passionate about mentoring junior leaders, the delivery of combat healthcare to Army, and ab-initio training.

Corresponding author name: Kelly Dunne and Steve Adamson

Corresponding author email:
kelly.dunne@defence.gov.au

Hearing loss in the Australian Defence Forces

Dr David Sly¹, Professor Gary Rance, Professor Stephen O’Leary

¹ Ear Science Institute Australia, Swinburne University of Technology, The University of Melbourne, Perth, Australia

Hearing loss is the most prevalent health problem of returned soldiers, with over 30% of soldiers suffering permanent hearing damage.

When there is a potential hearing loss on the battlefield, there is currently no way to quickly confirm this, placing soldiers and crew at risk due to lost situational awareness. There is also no current drug treatment for hearing loss.

Recently there has been a paradigm shift in the laboratory and clinical understanding of the onset and progression of hearing loss due to noise exposure. Our new understanding of the ‘hidden hearing loss’ due to damage to the nerves in the inner ear suggests that hearing loss may be well advanced before the standard hearing test (i.e. the audiogram) used for

decades in military and other populations detects any deficits. It also suggests new drug treatments targeting this nerve loss may be more achievable than previously thought.

Here we outline recent studies by our group and others indicating that new devices, new tests and new drug therapeutics are needed and on the foreseeable horizon for detection and mitigation of hearing loss in military and civilian populations. We describe the results of our studies of mobile hearing test devices in and hidden hearing loss in soldiers from Victoria and Simpson barracks. We also outline our translational studies into nerve growth factors as a possible drug treatment for noise-induced hearing loss and recent clinical trials of these drugs for treating hearing loss.

Biography:

Dr Sly is Chief Operating Officer - Research at the Ear Science Institute Australia. He is also Senior Lecturer in Clinical Technologies, Swinburne University of Technology and holds an honorary appointment at the Department of Otolaryngology, University of Melbourne and Royal Victorian Eye and Ear Hospital. Dr Sly’s research interests are in hearing loss, hearing diagnostics, inner ear protection and cochlear implants.

Corresponding author name: David Sly

Corresponding author email:
david.sly@earscience.org.au

Heat stress management in the Australian Army: Enhancing capability through improved policy and a Heat Stress Management Tool (HSMT)

Ms Alison Fogarty², Ltcol Sandy Hedger¹, Dr Sean Notley²

¹ Australian Army, Canberra, Australia

² Defence Science and Technology Group, Melbourne, Australia

No consent to publish abstract

Biography:

Lieutenant Colonel Sandy Hedger is a General Service Officer in the Royal Australian Army Medical Corps. She is currently posted to the Directorate of Army Health. Ms Alison Fogarty and Dr Sean Notley are Defence Human Performance Scientists. Their area of expertise is optimising safe work in extreme environments.

High Tech Wars: Emerging Threats to the Reproductive Health of Military Members and Veterans

Dr Rachele Warner^{1,2}, Associate Professor Susan Neuhaus¹, Dr Jodie Avery^{1,2}, Professor Michael Davies^{1,2}

¹ University of Adelaide, Australia

² Robinson Research Institute, Adelaide, Australia

War and conflict constantly evolve. However, war is about much more than combat or the technologies we fight with, and focusing on weaponry may blind us to the broader social, political and cultural context and effects of these technologies on the humans who constitute our militaries. The potential of exposing military members to fertility compromise is both a physical and a moral issue. Exposure to reproductive toxicants, side effects of protective equipment and medical prophylaxis, and the potential to weaponize biological or chemical substances that could cause infertility are issues that should be considered rigorously. This paper considers emerging threats, both current and futuristic, to the reproductive health of military veterans and the implications for preventative medicine policy.

Biography:

Rachele Bonner joined the public service as a multitasking ninja, and that pretty much describes her career to date. She has deployed into the Middle East, Iraq and the Philippines, and has some experience in international and operations law, including undertaking health threat risk assessments of new weaponry. Fuelled mostly by caffeine and dogs, she is also a certified geek with a PhD in Reproductive Medicine, designs and makes wedding accessories for pets and cosplay props, and is an expert procrastinator.

Corresponding author name: Rachele Warner

Corresponding author email:
rachele.warner@adelaide.edu.au

How biofeedback technologies are being used within XR systems for training and/or educational applications

Associate Professor Karen Blackmore¹, Mr Benjamin Krynski², Dr Shamus Smith³

¹ University of Newcastle, Newcastle, Australia

² Real Response, St Kilda, Australia, ³Griffith University, Brisbane, Australia

Introduction

Augmented Reality (AR), Virtual Reality (VR) and Mixed Reality (MR), or inclusive as Extended Reality (XR), describe immersive technologies that can merge the physical and virtual worlds. Physiological measures provide a quantitative evaluation of user response to certain stimuli in these computer-generated synthetic environments, or “virtual environments”, and can provide a feedback loop to significantly improve user experience and performance in such environments.

This presentation will explore how biofeedback technologies and approaches are being used within AI enabled XR systems for training and/or educational applications. The biosignals explored provide insights into physiological and/or emotional processes in users/participants. The presentation will discuss how biometric feedback is used in XR technologies, with a focus on specific biofeedback sensor use in the context of simulation training and education, concluding with recommendations about how biometrics can appropriately be used in XR synthetic training systems.

Method

A systematic review was conducted following the PRISMA guidelines looking at ‘What biofeedback technologies and approaches are being used within AI enabled XR systems for training and/or educational applications?’. An initial scoping search of existing research revealed many theoretical and untested-on-human concepts and approaches. From this scoping search, the key inclusion criteria for this literature review were defined. Of importance is that the included biofeedback enabled systems are validated on real human participants and therefore provide actual experiment results. A total of 803 studies were identified for screening and post evaluation, 48 met the search criteria and were included for analysis.

Results:

A total of 11 different biosignals were captured across the different studies. When considering the use of

biosignals by primary measure, stress made use of the most individual biosignal types. Electrodermal activity, also referred to as galvanic skin response (GSR), was the most widely used biosignal, with most application in the measurement of stress, cognitive load, and emotions. Eye tracking was also frequently used in the measurement of stress, cognitive load, and attention.

A total of 42 different biosensor devices were identified in the resultant studies. These sensors covered a range of different implementation approaches, from purpose-built integrations, experimental lab setups, and implementations using commercial off-the-shelf equipment.

Each of the biosignals in the studies enables biofeedback mechanisms and can form the basis of AI/machine learning approaches to remove artifacts, process signals into usable data, and/or identify patterns. The biosignals themselves provide insights into physiological and/or emotional processes in users/participants.

Conclusion & recommendations

This paper summarises current research implementing XR technologies in combination with biofeedback and AI approaches, with a focus on the specific biofeedback sensor use in the context of simulation training or education contexts. Several important recommendations emerge from the research, including:

A minimum of two biosignals should be captured where possible, and thus devices that capture multiple biosignals are preferred.

The use of simpler sensor technologies and associated measures is preferred to limit the impact of movement artifacts and maximise reliability of data. Wristband devices present as particularly useful devices for biofeedback implementations in XR simulation training applications.

Given the dynamic innovation occurring in biosensing technology, implementations of biofeedback enabled XR synthetic training systems should focus on identifying appropriate biosignals and actuation of biofeedback in virtual environments and tasks. A “plug and play” approach to sensing technology is recommended, allowing sensing technologies to be updated/upgraded overtime while the fundamental benefits of the biofeedback implementation are retained. As such, details regarding integration of biosensing technologies with synthetic environment development tools (ie. game engines) should be a focus of development approaches.

Biography:

Ben is the Co-Founder & Director of Future Projects at Real Response, he is also a Registered Paramedic with 15+ years of domestic and international pre-hospital experience. He has a strong passion for human factors and searching for the most impactful solutions for critical skill training. He now leads the Serious Games team at Real Response working on cutting-edge technologies utilising Extended Reality (XR) systems, biometrics and Artificial intelligence (AI). Ben lives in Sydney and maintains his clinical hours with NSW Ambulance when not focused on researching, developing and testing new training technologies.

Corresponding author name: Benjamin Krynski

Corresponding author email:
bkrynski@realresponse.com.au

I'm old, not dead! Caring for our nation's older veterans

Mr Nathan Klinge¹

¹ RSL Care SA, Australia

993,000 Australians served in the military forces during WW2 representing around 14% of the total population at the time, whereas only just under 60,000 Australians served in the Vietnam War, representing well under 1%.

Veterans from the Vietnam era are now moving through their later years into aged care, where veterans as a whole represent an ever-diminishing population in aged care as the WWII numbers dwindle. The impact of this will see a much-reduced capacity within the residential aged care sector to respond to the cultural and social care needs of veterans, given it is likely in the years ahead a provider operating a 100+ bed facility may only have one lone war veteran in their care.

Previous generations of veterans from WW1 and WWII have held a much more prominent and visible place within our aged sector, which in those times created more opportunities for aged care providers to facilitate appropriate care outcomes for veterans and their peers. So, what will happen to those from the Vietnam War era and beyond?

While there has been much focus in recent years on the transitional requirements of younger veterans leaving the ADF, little attention has been placed on the ‘transition’ of Vietnam Veterans as they move through into the later years of their life.

At RSL Care SA we believe that ageing is simply another of life's transitions, and like all transitions, if its managed appropriately it can be done well and to the veteran's advantage.

So what do we know?

When a veteran has a complex mental health background, their interaction with caregivers and services within the aged care industry may be adversely affected. Furthermore, older veterans with complex physical and mental health conditions have additional care requirements, and these cannot always be met within the existing skillsets and experiences of the aged care industry. In particular:

Post Traumatic Stress Disorder (PTSD) and impact on early ageing - People with PTSD can find that the ageing process exacerbates pre-existing PTSD symptoms. Medical illness and reduced physical ability may mean the individual is unable to manage symptoms using previous coping strategies, and concurrently their retirement from work and fewer family responsibilities can mean fewer distractions from their PTSD symptoms.

Social isolation - Experiences of social isolation throughout a veteran's life can pose ongoing health and wellbeing risks for them as they age, particularly for those who live alone, have smaller social networks, and who have fewer opportunities to engage in meaningful social activities.

Dementia - Veterans with PTSD or who have been wounded in combat have significantly higher risk of developing dementia, when compared with groups without PTSD or who were not wounded in combat.

Veteran culture. In the past the aged care sector was quite well-informed with respect to the idiosyncrasies of veteran culture, partly due to the sheer weight of numbers that veterans held in the aged care community, but also because many of the caregivers themselves had direct family links to the WW1 or WWII veteran communities (or both). Increasingly however the veteran population represents a much smaller percentage of the aged care community and many of the care providers themselves come from overseas, meaning that the industry has largely lost its intrinsic capacity to meet the culture needs of our older veterans.

This presentation discusses the aged care sector's capacity to provide culturally safe and person-centred care for veterans.

Suggestions will be provided to enable ESOs and other members of the veteran community to strengthen the aged care sector's ability to better cope with the changing needs of our emerging and ageing veteran populations.

Biography:

With over 23 years of full-time military experience, and now being employed as a CEO in aged care, Nathan has served in a variety of leadership, management and training positions. Nathan has served as a Director on a variety of not-for-profit boards, and he represents veteran health issues on South Australia's Veterans Advisory Council and on SA Health's Veterans Health Advisory Council. Nathan is also involved in a number of committees and working groups at the national level focused on improving outcomes for consumers in residential care.

Nathan is a passionate advocate of veteran health and wellbeing issues, particularly concerning older veterans and veterans who are homeless.

Nathan has three university-aged daughters, and for some reason he still seems to be mowing his ex-wife's lawn.

Implementation of endorsed TCCC Medical Practitioner proficiency: Empowering Army clinical interventions from point of injury through evacuation to treatment facilities

Warrant Officer Class One Nathan Grumley¹

1 Australian Defence Force, Australia

The primary intent of TCCC is to reduce preventable combat death through a means that enables mission success while providing the best possible care at the correct time to promote a battlefield casualties best chance of survival. The implementation of TCCC concepts has application in prehospital casualties beyond combat trauma, particularly with respect to treatment priorities, procedures and management of evacuation care goals.

Contemporary military forces have implemented widespread TCCC at the basic level, which the ADF has included as a tenet of combat behaviours within foundation warfighting. The Army School of Health (ASH) has developed and implemented a training continuum for all health care providers to adopt the TCCC Medical Provider proficiency, which incorporates further procedural and clinical interactions to support tactical field care and evacuation to a destination treatment facility.

The implementation of the TCCC (MP) as endorsed by Director of Army Health, enables enhanced provision of care in austere and remote environments to include

haemorrhage control, airway management, fluid resuscitation, analgesia, antibiotics and high impact clinical techniques as important adjuncts toward providing the best possible care in an environment characterised by limited resources and prolonged evacuation timelines.

A session presented by the Senior Medical Technicians of the Health Battalions will outline the developmental background, endorsed deliverables and the implementation of the TCCC (MP) into training establishment and deployable training programs.

Biography:

WO1 Robbie Cuttler

WO1 Chris Owen

WO1 Joel Travica

WO1 Ade Brooks

Integrated Aeromedical Support to the US Marine Corps in the Northern Territory

Mr Mick Frewen, Dr Paul Hanley

CareFlight will present on six years of fully integrated aeromedical support to the United States Marine Corps (USMC) in the Northern Territory.

CareFlight has been providing contracted aeromedical support to the USMC exercises and training activities in the Northern Territory for the last six years, across some of the most remote military training areas in the country. The support consists of a fully integrated aviation and medical service which has been delivered over both fixed wing and rotary wing platforms during that time to meet the USMC changing needs.

CareFlight will share its insights into aspects of contract management of aeromedical services and the advantages of being a true partner in the contract development and service design.

We will share lessons learnt from the contract that demonstrate innovation in the service delivery model and supply chain.

We will discuss the clinical governance framework in the Northern Territory and how CareFlight provided seamless integration of the USMC service into the Territory health system.

ADM extract March 15th 2022 US Marines Arrive in Darwin:

“Commanding Officer Headquarters Northern Command, Colonel Marcus Constable said that the rotation would build on the success of last year’s deployment which coincided with the 70th anniversary of the Australia, New Zealand, and United States (ANZUS) treaty.

“Australia’s alliance with the United States is our most important defence relationship and is central to Australia’s strategic and security arrangements,” he said.

“The MRF-D is a key way we increase regional cooperation with partners in the Indo Pacific and deepen interoperability between the ADF and the US Marine Corps.”

“Together we conduct a comprehensive range of training activities including humanitarian assistance, security operations and high-end live fire exercises. These better position our forces to respond to crises in the region,” Colonel Constable said.

CareFlight Background

As a veteran led for-purpose organisation CareFlight has long history of delivering critical Aeromedical services to the ADF and its allies such as the United States Marine Corps (USMC) and various State and Federal Police forces

CareFlight is Australia’s only fully integrated provider of aeromedical and healthcare solutions across clinical services, helicopters, jets, turboprop aircraft and ground transport solutions. Our experience and depth are built on our national Clinical Governance and a depth of experience delivering services and training in every state and territory in Australia. We can tailor solutions to meet the most complex clinical and aeromedical requirements, evidenced by over 36 years’ experience supporting Government and Corporate clients ensuring they get the right support first time, every time.

Biography:

Mick has 13+ years’ experience managing aeromedical retrieval services and large-scale evacuation capabilities utilising commercial aviation capabilities across the Asia Pacific Region. Mick commenced his career in the military, serving for 20 years in the army in Commando and SAS roles, utilising military aviation assets on operational deployments; retiring with the rank Lieutenant Colonel. Mick’s demonstrated experience in leading organisations in challenging commercial and military roles, combined with his experience in and knowledge of the emergency medical retrieval sector, make him eminently well qualified to lead CareFlight.

Dr Paul Hanley MB.Bs, B.Sc, FACEM, FRACGP.

Dr Paul Hanley is an Emergency Physician at Nepean Hospital and a General Practitioner Specialist Doctor.

Dr Hanley is a Retrieval Specialist whom has worked for RFDS, Sydney HEMS and currently one of the Retrieval and Pre-Hospital Specialists with the Careflight Rapid Response Helicopter Service at Westmead. He has deployed on Humanitarian Mission to Bangladesh and Dr Hanley is the currently the Medical Director for Careflight- Special Projects. He is a Major. in the Royal Australian Army Medical Corps (RAAMC) and he has deployed to Bushfire Assist, Covid 19 Assist to North West Regional Hospital in Burnie, TAS and to Afghanistan.

Corresponding author name: Mick Frewen

Corresponding author email:
mick.frewen@careflight.org

Introducing Defence's new \$765m Health Knowledge Management (HKM) System

Mr Richard Wallace¹

¹ Department Of Defence, Canberra, Australia

No consent to publish abstract

The panel will consist of:

- Brigadier Isaac Seidel, Director General, Operational Health, Joint Health Command
- Dr. Darrell Duncan, Director Strategic Clinical Assurance, Joint Health Command
- Mr. Nelson Bates, Assistant Secretary, Joint Integrated Capabilities Branch

Managing Japanese encephalitis risk in New South Wales and implications for the ADF

Dr Paul Byleveld¹

¹ NSW Health, St Leonards, Australia

No consent to publish abstract

Biography:

Colonel Byleveld has served as an Army Reserve member of the Royal Australian Army Medical Corps for 30 years. He is currently posted to the Directorate of Army Health, Army Headquarters as Clinical Advisor NSW Region. He has operational experience

as an Environmental Health Officer in Papua New Guinea, East Timor, and Indonesia (in post-tsunami Banda Aceh). Colonel Byleveld is an ADF faculty member for the Uniformed Services University of the Health Sciences distance learning program in Global Health and Global Health Engagement.

Dr Byleveld is currently Acting Director of the Central Coast Public Health Unit. During 2020-2021, Dr Byleveld was a team leader in the NSW Public Health Emergency Operations Centre and the COVID-19 Public Health Response Branch. His substantive role is Manager Water Unit, Environmental Health Branch, New South Wales Ministry of Health.

Dr Byleveld is a specialist in water, sanitation, hygiene, and public health. He has experience with the International Committee of the Red Cross, the Australian Government, and the United Nations High Commissioner for Refugees in humanitarian emergencies resulting from conflict, violence, natural disasters, and disease outbreaks. He has completed deployments in Africa, the Middle East, South Asia, Southeast Asia, and the Pacific.

Medical Aspects of the Non-combatant Evacuation Operation of Kabul, Afghanistan in August 2021

Dr Steve Adamson¹

¹ Department of Defence, Canberra, Australia

The recent evacuation of Australians (and Afghan citizens with Australian ties) during the fall of Kabul was one of the most complex Operations supported by the Australian Defence Force in recent memory. Integral to the success of the Operation was a range of operational health effects delivered by small teams of personnel from a variety of military and civilian backgrounds. Despite the significant risk, relentless tempo and multiple agencies involved, the Operation was deemed a resounding success, with 4100 people evacuated by Australian government agencies in a two week period.

This oral presentation will describe circumstances on the ground in Kabul and at Al Minhad Air Base in August 2021, and share observations that may be of interest to military medicine leaders and practitioners in other high tempo and complex settings. Lessons from the evacuation may assist in shaping a "pathway to the future" with a more apposite appreciation of military medical risk, an understanding of the unique strengths of medical practitioners, and an example of how technical control of health capabilities might be exercised in volatile and uncertain environments.

Lessons from the evacuation Operation include the importance of building resilience in teams, foundational skills and knowledge, trust, and a goal-focussed culture. The presentation will also highlight how the principles of “mission command”, well-used in combat operations, are indispensable to military medical practice in complex environments.

Biography:

Lieutenant Colonel Adamson is the Senior Medical Officer at the Directorate of Army Health in Canberra. He has served in a variety of roles as a doctor in the Australian Army including a three-year exchange posting in the United States. He has deployed to the Middle East on several occasions, most recently as the Senior Medical Advisor during the evacuation of Kabul in August 2021. He studied Medicine at the University of Queensland and is a Fellow of the Royal Australian College of General Practitioners.

Corresponding author name: Steven Adamson

Corresponding author email:
steven.adamson@defence.gov.au

Medical aspects of the war in Ukraine: An analysis of information from open sources

Colonel Anthony Chambers¹

1 Headquarters 17 Sustainment Brigade, Sydney, Australia

On 24 February 2022, Russian military forces invaded the Ukraine. This was a major escalation of the armed conflict between these two states that began with the annexation of Crimea by Russia in 2014.

As at 29 June it has been estimated that the Ukraine military have sustained more than 10,000 killed and 30,000 wounded personnel. In this same period it is estimated that the Russian military have sustained 16,000 killed with an unknown number of wounded.

The civilian population of the Ukraine has also been heavily affected by the invasion with the United Nations estimating that 4,731 have been killed and 5,900 wounded in the conflict as at 26 June, with 7.1 million people internally displaced and 7.3 million refugees leaving the country.

The Ukrainian civilian health system has been placed under overwhelming pressure due to the number of civilian and military casualties, and numerous attacks affecting civilian health assets where 76 people have died and 59 have been injured in 295 separate incidents up to 15 June.

Information available from publicly accessible sources including the United Nations, World Health Organization, United States and United Kingdom government and non-government agencies, Medline, Google Scholar, medical journals, media organisations and investigative journalism groups was collected and analysed. Information relevant to the medical aspects of the conflict including casualty numbers and rates, types and patterns of injury, battle versus non-battle injuries, medical support to military forces and the civilian population, disease threats, and effects on the existing Ukrainian health infrastructure was identified and collated. The collected information was analysed to create a picture of the medical aspects of the war, and to identify learning points for ADF health services.

Biography:

Colonel Chambers is currently the Director of Clinical Services at Headquarters 17 Sustainment Brigade. He has served in multiple command appointments including Commanding Officer 3rd Health Support Battalion from 2018 to 2020. He has seen operational service in Timor Leste, Bougainville, disaster response to the tsunami in Indonesia, Iraq, Afghanistan and Ukraine. In his civilian role he is Head of General Surgery at St Vincent's Hospital Sydney and Senior Lecturer at UNSW Sydney.

Corresponding author name: Anthony J. Chambers

Corresponding author email:
anthony.chambers@defence.gov.au

Medical lessons from the Falklands campaign: A case study of minimum, better, best

Dr Steve Adamson², Major Nick Alexander¹

1 1st Health Battalion, Holtze, Australia

2 Directorate of Army Health - AHQ, Canberra, Australia

‘In these days of technical elaboration and conspicuous consumption it is chastening, and necessary, to be reminded of what can be achieved by knowledgeable cutting of corners, which can perhaps be more acceptably described as concentrating on essentials when dealing with fit young men.’

P. S. London, FRCS – 1983

The geostrategic picture in the Indo-Pacific is changing, and the risk of near-peer conflict in our region increasing. As military health practitioners, we face these strategic circumstances with a major capability acquisition based on decisions made well over a decade ago when small wars and

counter-insurgency were the principal war fighting paradigm. We are grappling with a pivot away from delivering health support in secure, low intensity conflict to volatile liminal zones that require a truly joint approach; and a pervading mindset that strives for gold standard care in non-gold standard environments.

At times of great change, it is easy to think the problems we are facing are unprecedented. Rarely however is this the case. As GEN (ret'd.) James Mattis said;

'Ultimately a real understanding of history means we face nothing new under the sun.'

This presentation will use the case study of the British Armed Forces campaign in the Falkland Islands in 1982 to describe previous solutions to current problems in the delivery of littoral and sea-based health care against a sophisticated enemy. It will explore the constraints we may be generating with developing littoral force doctrine and clinical policy framework—constraints that may limit our ability to support large scale manoeuvre forces in a near-peer warfighting environment. It will make recommendations regarding the need for a different approach to risk in clinical governance, capability acquisition and training, to better position us for success in the likely austerity of future combat.

Biography:

Major Alexander B. Physio, Spec. Cert. Clin. Leadership, Grad. Dip. Pain Mgt

Major Alexander is currently the Officer Commanding Operational Support Company, 1 HB. He was appointed to the RAAMC in 2008 as a Physiotherapy Officer and division transferred to GSO RAAMC in 2018. He has completed postings within 1 HSB, 2 GHB, 1 CHB, JHC HQ and 1 HB across clinical, staff and command appointments.

Lieutenant Colonel Adamson, CSM B. Sc, MBBS, FRACGP

Lieutenant Colonel Adamson is the Senior Medical Officer at the Directorate of Army Health in Canberra. He has served in a variety of roles as a doctor in the Australian Army including a three-year exchange posting in the United States. He has deployed to the Middle East on several occasions, most recently as the Senior Medical Advisor during the evacuation of Kabul in August 2021. He studied Medicine at the University of Queensland and is a Fellow of the Royal Australian College of General Practitioners.

Corresponding author name: Nick Alexander

Corresponding author email:
nicholas.alexander@defence.gov.au

Military neurosurgery and the proposed deployable ADF joint Role 3 capability – a gap analysis.

Associate Professor Andrew Davidson^{1,2}, SQNLDR Rondhir Jithoo³, Major Paul Smith⁴, Major David Walker⁵

1 Royal Australian Navy, Melbourne, Australia

2 Royal Melbourne Hospital, Melbourne, Australia

3 Royal Australian Air Force, Melbourne, Australia

4 Royal Australian Army Medical Corps, Melbourne, Australia

5 Royal Australian Army Medical Corps, Brisbane, Australia

Background

Over the past 2 decades the Australian Defence Force (ADF) has successfully deployed Role 2E medical capability on operations overseas, and has contributed specialist surgical teams to coalition Role 3 medical facilities, but has never been called upon to provide a stand-alone deployable joint Role 3 capability. In 2019, Joint Health Command (JHC) published a Feasibility Study, identifying that there was a "military and clinical need for a joint Role 3 capability". A deployable ADF Role 3 capability will require Neurosurgery as a core specialist area.

More recently, between November 2020 and November 2021, four Australian Neurosurgeons deployed with an AUS Surgical Team to the US Army's Role 3 Hospital at BDSC, Iraq as part of the Combined Joint Task Force – Operating Inherent Resolve (CJTF-OIR).

Methods

A 'gap analysis' was performed, exploring the potential for the ADF to provide neurosurgical capability in support of a proposed ADF joint Role 3 capability.

As part of the analysis, the authors: 1) identify the current state of ADF Neurosurgery, 2) analyse the JHC report on the feasibility of developing an ADF joint Role 3 capability, 3) discuss the gap between the current state of Neurosurgery within the ADF and the required deployable Neurosurgery capability, and 4) propose strategies for closing the gap between current ADF Neurosurgical capability and the requirement to meet the proposed joint Role 3 capability.

Results

Although the current cohort of ADF Neurosurgeons are able to meet the capability requirements for a short-term operational Role 3 deployment, there are

several areas that need to be addressed if the ADF is to provide a sustainable Neurosurgical capability to the proposed ADF joint Role 3 capability. The authors identify several important capability requirements as part of the “Raise, Train, Sustain” model for providing military capability. These strategies align with the Australian government’s objectives to enhance Defence’s posture and partnerships in the region, and to provide health capabilities that ensure that joint health elements are able to meet Government direction and advance Australian’s strategic interests by shaping Australia’s strategic environment, deterring actions against Australia’s interests, and responding to credible military force when required.

Conclusion

The JHC Feasibility Study clearly determined that there is a military and clinical need for an ADF joint Role 3 capability. A “gap analysis” has identified a performance gap in the areas of specialist health workforce recruitment, skills acquisition & maintenance, and deployment opportunities & career progression for Role 3 specialists that will need to be addressed in order to meet the ADF’s need for a deployable joint Role 3 neurosurgical capability.

Biography:

Associate Professor Andrew S Davidson (MB BS, MS, PhD, FRACS) is an academic neurosurgeon at the Peter MacCallum Cancer Centre, Royal Melbourne Hospital, and Melbourne Private Hospital. He is the neurosurgical lead for the Victorian Gamma Knife Centre at Peter Mac. His clinical interests include the multidisciplinary management of brain tumours, pituitary and skull base surgery (including minimally invasive and endoscopic surgery), neurotrauma, cerebrovascular surgery, and spine surgery.

Associate Professor Davidson holds the rank of Surgeon Lieutenant Commander in the Royal Australian Navy. LCDR Davidson has undertaken operation service in Bougainville and East Timor, and recently completed a deployment to the Combined Joint Task Force – OIR Role 3 Hospital in the Middle East, where he was awarded the ADF Operational Service Medal. He continues to serve as Assistant Professional Liaison Officer (Surgeons) and as a simulation instructor for the Australian Defence Force.

Corresponding author name: Andrew S Davidson

Corresponding author email:
Andrew.Davidson2@mh.org.au

Moral Injury and Pastoral Narrative Disclosure: An Intervention Strategy for Chaplains to Assist the Rehabilitation of Australian Veterans

Chaplain Timothy Hodgson^{3,4}, Associate Professor Lindsay B. Carey^{1,2,3}

1 School of Psychology and Public Health, La Trobe University, Melbourne, Australia

2 Institute of Ethics and Society, The University of Notre Dame, Australia

3 Joint Health Command, Australian Defence Force, Campbell Park, Canberra, Australia

4 School of Historical & Philosophical Inquiry, University of Queensland, St. Lucia, Australia

Introduction

Internationally Moral Injury (MI) is an increasingly recognised and widespread syndrome (Koenig & Al Zaben 2021). The Australian Defence Force (ADF) defines MI as ‘a trauma related syndrome caused by the physical, psychological, social and spiritual impact of grievous moral transgressions, or violations, of an individual’s deeply held moral beliefs and/or ethical standards’ (ADF, 2021). Core symptoms commonly identifiable are: (a) shame, (b) guilt, (c) a loss of trust in self, others, and/or transcendental/ultimate beings, and (d) spiritual/existential conflict including an ontological loss of meaning in life. Secondary symptomatic features include (a) depression, (b) anxiety, (c) anger, (d) re-experiencing the moral conflict, (e) social problems, (f) relationship issues, and ultimately (g) self-harm.

Background

Qualitative and quantitative research previously presented at AMMA (which was bestowed the Weary Dunlop Award 2019), confirmed the presence of MI among the majority of interviewed and surveyed Australian veterans (Hodgson & Carey, 2019; Hodgson et al 2021; 2022). The research also highlighted the potential rehabilitation role of chaplains for addressing veteran MI (Carey, Hodgson, et al. 2016; Hodgson & Carey, 2017; Carey & Hodgson, 2018).

Purpose

This paper will present further developments since AMMA 2019, with regard to the initiation of a novel and proactive systematic chaplaincy rehabilitation program for ADF veterans experiencing moral injury.

Method

Based on Australian and international MI research, a unique eight-stage pastoral care rehabilitation program, called 'Pastoral Narrative Disclosure' for Moral Injury (PND-MI), is being developed and trialled for Australian chaplains to assist the care of veterans. An overview of both Australian MI research and the eight-stage PND-MI chaplaincy program will be presented.

Conclusion

The PND-MI strategy is designed to be an empirically based program to proactively assist chaplains to be competent in understanding MI and to enable chaplains to address MI among veterans, with the ultimate aim to improve their well-being and avert veteran suicide.

Biography:

Chaplain (WGCDR) Dr. Lindsay Carey, MAppSc, Ph.D., RAAFSR, is an Associate Professor (Adjunct) with the School of Psychology and Public Health, La Trobe University, Melbourne, and Associate-Professor (Adjunct) with the Institute of Ethics and Society, University of Notre Dame, Australia. A part-time RAAF Chaplain for over 20 years, he is currently the Senior Research Chaplain with Joint Health Command, researching veteran well-being, and is author of multiple publications regarding moral injury. Associate Professor. Carey was a co-recipient of the 'Edward Weary Dunlop Award' for 2019 by AMMA [along with Chaplain (SQNLDR) Dr. Timothy Hodgson], for their exploratory research into Moral Injury and its effects upon the well-being of military veterans. Biographical Details: <https://scholars.latrobe.edu.au/lbcarey>

Chaplain (SQNLDR) Dr. Timothy Hodgson, M.Int.Sec, MTh, PhD., is a RAAF Chaplain and Honorary Scholar with the University of Queensland. He provides advice and research support on issues relating to spiritual health and well-being for ADF Joint Health Command - particularly with regard to moral injury. Dr. Hodgson has served in the military for over 15 years and was co-awarded the 'Edward Weary Dunlop Award' for 2019 by AMMA for his exploratory research into moral injury and its effects upon the well-being of military veterans.

Corresponding author name: Lindsay B. Carey

Corresponding author email:
Lindsay.Carey@latrobe.edu.au

Musculoskeletal complaint epidemiology in Australian elite military trainees

Lieutenant Joanne Stannard, CAPT Lisa Wolski, Dr Liam Toohey, Alison Fogarty, Dr Michael Drew

1 Australian Army, Adelaide, Australia

No consent to publish abstract

Biography:

Lieutenant Stannard is an ARES physiotherapist and PhD candidate at Edith Cowan University. She is a Sports and Exercise physiotherapist and has worked in several health centres across Australia over the last ten years. Lieutenant Stannard is interested in human performance optimisation and injury prevention in the military, with her thesis investigating musculoskeletal injury epidemiology and injury reporting behaviours in combat populations.

Corresponding author name: Joanne Stannard

Corresponding author email: j.stannard@ecu.edu.au

Navigating military and civilian systems of care: Complex needs and care coordination

Dr Angela Maguire^{1,2}, Ms Julieann Keyser¹, Ms Kelly Brown^{1,2}, Professor Daniel Kivlahan^{1,3}, Dr Madeline Romaniuk^{1,2}, Dr Ian Gardner¹, Ms Miriam Dwyer^{1,2}

1 Gallipoli Medical Research Foundation, Greenslopes, Australia

2 The University of Queensland, St Lucia, Australia,

3 University of Washington, Seattle, USA

No consent to publish abstract

Biography:

Dr Angela Maguire leads the Military Families research stream at Gallipoli Medical Research Foundation (GMRF). She is a member of the Australian Psychological Society (MAPS) and a Fellow of the College of Clinical Psychologists (FCCLP). She holds an adjunct Senior Fellow position with the University of Queensland, Faculty of Medicine. Dr Maguire has held research, teaching, clinical, and administrative roles across the university and public health sectors, and has provided consultancy services to the private and not-for-profit sectors. Her academic work has focused on human learning and memory; and more recently,

military families. Her clinical work has focused on evidence-based intervention for people with complex needs and risky behaviours, particularly in the area of complex trauma. Dr Maguire has served on several advisory committees dedicated to aligning clinical practice, education, and research with health service priorities and population needs. She has considerable experience developing business case applications to support health service policy and planning, service (re)design, implementation, and evaluation.

Corresponding author name: Angela Maguire

Corresponding author email:
maguirea@ramsayhealth.com.au

No longer fixed in thought and location: mission focussed profiles for Army Role 1

Mr Trent Kirk¹, Mr Richard Niessl, Dr Peter Zimmermann, Mr Nicholas Alexander, Mr Ruan Blignaut

¹ Australian Army, Australia

Army Health Services (AHS) has long grappled philosophically with the enduring friction of providing high value care that enables manoeuvre mission success. This challenge has become ever more pressing in the rapidly changing operational and strategic environment. Along with the rest of the Army, AHS are engaged in significant force design and modernisation initiatives to meet the challenges of Ready Now, Future Ready. This article explores the resurgence of Role 1 concepts and the current trials being undertaken within AHS to ensure we are positioned to provide the right care, at the right place, at the right time on the battlefield.

What does Role 1 need to look like in order to survive and thrive in a mid-high intensity warfighting environment? How does it mitigate against the threats posed by a sophisticated enemy on one day, while still being able to pivot to other operational mission sets AHS may be called upon to fulfil? The principles of health support have long guided our thinking to meaningful capability effects, in particular: conformity; flexibility; and protection and mobility.

We argue that the Role 1 solution cannot be the standardised one-size fits all capability it has become; instead, it needs to be a scalable mission specific entity that gives options to commanders. We propose four Role 1 mission profiles; Light, Manoeuvre, Heavy and Static. With options, a commander is able to manage the risk to people against the risk

to mission. In this regard, AHS are enabling, rather than constraining, manoeuvre.

Throughout its history AHS has developed Role 1 solutions that met these mission requirements. Cycles of organisational amnesia have led to these capabilities withering and disappearing. Acknowledging this capability gap for over a decade, 1 HB and its antecedent units have dabbled in concepts for Role 1 mobility without broad acceptance.

Recently there has been a resurgence of interest in Role 1 mobility by manoeuvre commanders. This has yielded dividends in redeveloping long forgotten capabilities. 1 CHB was able to revisit the concept and trial the tactical employment of R1 Manoeuvre (R1M) in support of the mechanised BG BOAR as part of EX KOOLENDONG 21; and during EX SOUTHERN JACKAROO, 11 Close Health Company, 2 HB delivered a mechanised R1M in support of the mechanised BG HEELER.

The mobility of the R1M at the A1 echelon enables it to maintain proximity and deliver rapid MO-led triage and optimisation for evacuation. Battle Groups are able to maintain combat tempo through shortened lines of evacuation and faster clinical decision making. This has been thoroughly tested in both simulated and NO DUFF situations.

Following this success, 1 and 2 HB, in collaboration with the 1st Brigade and 6 RAR have further developed the tactical and clinical employment of the R1M. This has been paired with conceptual development and testing of the R1 Light concept by 1 HB on OP RESOLUTE, and in support of other 1st Brigade littoral activities. The success has piqued the interest of Combat Brigades, FORCOMD and AHQ resulting in the development of an Army Land User Evaluation to be delivered in 2022.

To meet the challenges of the current and future operating environment Army's Role 1 capability needs a shake up. Through projects like the R1M LUE and continued collaboration with manoeuvre commanders AHS can achieve our required enabling effects close to the fight, keeping patients in motion and getting them to the right place, for the right care at the right time.

Biography:

Lieutenant Colonel Kirk is the CO of 1 HB. He has served within 1HB, 1 CSSB, DMO, JHC, 1 CHB, HQ 7 BDE, US Army Medical Department Center and School, CMA and HQ 1 BDE

Lieutenant Colonel Niessl is the CO of 6 RAR. He has served within 3 RAR, 4 RAR, 2 RAR, 9 RQR, ADFA and HQ 1 DIV. He has deployed on OP VISTA, TANAGER, CATALYST, ASTUTE and HIGHROAD.

Organisational Change Management Impacts on Emergency Services and Defence Interoperability - Towards Future High Risk Weather Seasons

COL Toni Bushby, Dr David Heslop, BRIG Georgeina Whelan¹

1 Army, Campbell, Australia

The ACT Emergency Services Agency in collaboration with the Directorate of Army Health and the UNSW is conducting a three year study to identify the various factors affecting the change management success across two areas (a) a multidisciplinary Emergency Services Agency and (b) a combined Emergency Services / Defence response to and recovery from natural disasters. This presentation will outline the work completed in the first year of the study. It is intended to follow up at subsequent AMMA's 2023 and 2024 with progress reports and study findings.

Biography:

Brigadier Georgeina Whelan is a Reserve Project Officer for the Directorate of Army Health. She is also the Commissioner of the ACT Emergency Services Agency.

Colonel Toni Bushby is the Director of Army Health

Lieutenant Colonel David Heslop is a Reserve Medical Officer and an Associate Professor UNSW School of Population Medicine

Corresponding author name: Toni Bushby

Corresponding author email:
Toni.bushby@defence.gov.au

Pelvic health in female military personnel symposium: collaboratively mapping out an evidence-based pathway to the future

Dr Simone O'Shea¹

1 Charles Sturt University, Albury, Australia

Background: As the proportion of women within the Australian Defence Force continues to grow, unique gender specific health requirements across the broad spectrum of military contexts requires consideration. Pelvic health is a key area where the care and support needs vary between sexes given

differences in pelvic anatomy and function. Despite a growing body of female military health research, a scoping review and gap analysis from 2019 identified that there were more gaps in evidence and a greater proportion of lower quality studies in the areas of female military pelvic and reproductive health. In addition, the vast majority of research has been undertaken in international contexts, predominantly the U.S. Armed Forces. In determining the policies, practices and services required to support and strengthen the pelvic health of female military personnel in the Australian Defence Force into the future, it is essential to bring together the best available evidence, knowledge of current practices and policies, understanding of service requirements and contexts, as well as and the overarching structural or organisation factors.

Aim: Therefore, the aim of this female pelvic health symposium is to comprehensively bring together Australian and international research, identify challenges and emerging issues, and collaboratively develop approaches to inform policies and practices that strengthen pelvic health, operational readiness, and occupational performance in female military personnel in the ADF

Biography:

Simone has been a Physiotherapist for 22 years and is a lecturer in the Physiotherapy program at Charles Sturt University. She has clinical and research interests in women's health and chronic health condition management. Since 2018 Simone has been leading a Defence Health Foundation funded project focused on female pelvic health in the Australian Defence Force.

Corresponding author name: Simone O'Shea

Corresponding author email: soconnor@csu.edu.au

Plans are useless, planning is indispensable – resuscitating the art of health planning

Mr Trent Kirk¹, Major Peter Zimmermann¹, Major Nick Alexander¹

1 1st Health Battalion, Holtze, Australia

'Fools learn by their experience – I prefer to learn by the experience of others'

Otto von Bismarck

Health planning is so much more than conducting a casualty calculator, putting a start state of health

assets on a map and then panicking once casualties start mounting because the plan hasn't survived first contact. As with all complex endeavours health planning takes practice, but it also requires the pragmatic application of the principles of health support and frankly – junior Army officers don't do it enough.

We have lapsed into a false paradigm where our belief in the primary value proposition for junior health officers is the day to day Command, Lead and Manage functions of the Garrison environment. We have forgotten that arguably their most critical deployable function will be one of planning. This lack of exposure to and emphasis on realistic health planning for operations at the Lieutenant and Captain level is setting our people up to fail when they transition into deliberate planning roles at the Combat Brigade and Divisional level. This generates risk for the development of inadequate plans, and health planners who are not agile enough to adapt to the fog of war.

This presentation will explore a recent complex multinational exercise, undertaken amidst the COVID pandemic in the most remote and challenging training area in Australia. This forced health planners to develop novel solutions to enable the Commander to balance risk to people with risk to mission. The deliberate health planning process ensured both real time and scenario health support requirements were met and junior health planners were enabled and engaged in the process. This facilitated a true understanding of the principles of health support as guiding markers to the art of health planning. Finally it will make recommendations on how we can enhance the focus on deliberate health planning skills within our school houses and at Unit level.

Biography:

Major Alexander is the Officer Commanding Operational Support Company, 1 HB. He was appointed to the RAAMC in 2008 as a Physiotherapy Officer and division transferred to GSO RAAMC in 2018. He has completed postings within 1 HSB, 2 GHB, 1 CHB, JHC HQ and 1 HB across clinical, staff and command appointments.

Lieutenant Colonel Kirk is the Commanding Officer of the 1st Health Battalion. He has completed postings at the 1HB, 1 CSSB, DMO, JHC, 1 CHB, HQ 7 BDE, US Army Medical Department Center and School, CMA and HQ 1 BDE. Lieutenant Colonel Kirk completed Australian Command and Staff College in 2019 as a distinguished graduate and is a graduate of the United States Army Medical Strategic Leadership Program.

Major Zimmermann is the Senior Medical Officer of 1 HB. He was appointed to the RAANC in 2001 as a Nursing Officer. He subsequently completed his medical degree and transferred to the RAAMC as a Medical Officer. He has served with 8 CSSB, 1 HSB, 1 CSSB, 7 RAR, ASH, 1 CHB and 1 HB. He has performed numerous clinical, instructional, administrative and command roles.

PNG Defence Force's Medical Response to Tari Hospital

Major Bradley Maniha¹

1 PNG Defence FORCE, Papua New Guinea

A team of PNGDF medical personnels were deployed to assist Tari Hospital located in the Hela Province of PNG, on the 26th February 2018. This call for assistance was in response to 2 types of disasters (Man-made and Natural) that occurred one after the other.

Initially there was an earthquake measuring 7.5 magnitude on the Richter scale which caused a lot of damages. There were a significant number of casualties due to trauma as a result of this natural event. Fierce ethnic clash erupted (man-made disaster) during this time which saw an exponential increase in nasty traumatic injuries presenting to the Tari Hospital.

PNGDF presence was a great relieve for the then under resourced Tari Hospital.

Biography:

Dr Bradley Maniha:

I am a surgical Registrar with the PNGDF. I graduated from the university of PNG's school of medicine & health sciences in 2010 before enlisting with the PNGDF in 2013 following my residency program.

I was the OC clinical Wing of the PNGDF military hospital for 5 years before embedding to the PNGDF special forces unit in preparation to delivering a safe environment for the hosting of the 2018 APEC SUMMIT in PNG. It was during this time (2018) when I was called up to lead a medical contingent to assist with disaster (earthquake + ethnic war).

Corresponding author name: Bradley Maniha

Corresponding author email:
captmaniha@gmail.com

Pregnancy, birth and motherhood in the Australian Army: The experience of healthcare as a form of regulation of bodies and babies

Lieutenant Colonel Maureen Montalban^{1,2}

¹ Australian Army, Canberra, Australia

² The Australian National University, Canberra, Australia

The military is a predominantly male dominated organisation that has entrenched hierarchical and patriarchal norms. Since 1975, women have been allowed to continue active service in the Australian Defence Force during pregnancy and after the birth of a child; prior to this time, pregnancy was grounds for an automatic termination. My research explores what it means to serve in the Australian Army as a woman through a gender lens, overlaid during a specific time period of their service; that is, during pregnancy, birth and being a mother.

The basic entitlement to the range of medical services provided to members of the Permanent Forces is that which is equitable to Medicare under the provisions of the Health Insurance Act 1973. Due to the requirement to meet and maintain operational readiness standards, the range of and access to health care provided to ADF members will usually exceed that available through the public health care system. Additionally, in order to be fit to deploy and defend Australia and its national interest, there is an expectation upon entry into military service that an individual relinquishes some autonomy over their body. To what extent does this relinquishment extend to servicewomen during their pregnancy, labour and the post-natal period? Furthermore, what is the operational imperative to refer ADF servicewomen to private obstetric care (the standard model of care offered to ADF servicewoman at the time of my data collection)?

My research provides a platform for the stories of women who have given birth during their military service with the Australian Army and the doctors that have provided care to servicewomen during pregnancy and post-partum. It articulates the type of care received, why it was provided and received, and how the experience of healthcare within military service in the Australian Army is a form of regulation over women's bodies.

Biography:

Maureen is a military psychologist who has worked at the tactical, operational and strategic environment within the Australian Army, providing psychological advice and interventions to individuals, units and Commanders. She has done so within Australia

and on operational deployments to Timor-Leste, the Solomon Islands and the Middle East.

Maureen is undertaking a part-time PhD at the National Centre for Epidemiology and Population Health, the Australian National University. She is examining gender culture in the Australian Army through an investigation of the experience of servicewomen during pregnancy, birth and motherhood. Her research investigates the external demands faced by servicewomen who are mothers and how they internally make sense of this with respect to identity and role expectation. It also seeks to uncover how Australian Army servicewomen who are mothers attempt to manage the dilemma of serving two greedy institutions, whether this is in fact, an impossible dilemma.

Corresponding author name: Maureen Montalban

Corresponding author email:
maureen.montalban@defence.gov.au

Preventing the development or persistence of mental health problems in high risk occupations: An evidence-based approach

Professor Jennifer Wild¹

¹ Phoenix Australia - Centre for Posttraumatic Mental Health, Australia

Research shows that individuals regularly exposed to trauma are at elevated risk for developing psychiatric disorders, such as major depression, post-traumatic stress (PTSD), and substance use disorders. Episodes of mental ill health are costly to individuals, their families and society and can trigger physical health comorbidities. Notably traumatic stress increases risk for later cardiovascular problems and in some cases, early death. Physical health problems can, of course, pre-date mental health problems increasing risk for their emergence. A challenge for the field is determining how to prevent or reduce psychopathology from developing for individuals who will knowingly face significant stressors in their line of work. In this talk, I will give an overview of the systematic research I've conducted with my team in the UK which has culminated in interventions demonstrated to reduce the incidence of PTSD and depression in at-risk occupations by over 70% and clinically significant sleep problems by almost 30%. The interventions target cognitive processes that predict and maintain common psychiatric disorders. I will also present findings of our latest evaluation of a brief intervention we developed for frontline

healthcare workers. This was delivered by low intensity wellbeing coaches during the pandemic and was associated with a reliable recovery rate of 94% for PTSD and 65% for depression. I will then focus on lessons learned from this approach that could be applied to improving the mental health trajectories of military members throughout their service and as they transition to civilian roles.

Biography:

Professor Jennifer Wild is the Professor of Military Mental Health at Phoenix Australia, University of Melbourne. She is a clinical psychologist and holds an appointment at the University of Oxford. She is an international expert on how to build resilience to stress and trauma, and on how to overcome post-traumatic stress disorder (PTSD). She has successfully helped hundreds of people to reclaim and transform their lives.

Corresponding author name: Jennifer Wild

injury period. The pathophysiological mechanism accounting for the early onset coagulopathy appears to be hypoperfusion and tissue injury resulting in the subsequent activation of hyperfibrinolysis and the protein C cascade. Several studies have demonstrated that severe trauma increases the levels of circulating procoagulant phospholipids, tissue factor-bearing microparticles, activated platelets and monocytes, potentially resulting in the activation of the coagulation and fibrinolytic systems. This hyperacute coagulation defect has only relatively recently been identified and therefore has been the focus of a myriad of management strategies to control massive haemorrhage. Systemic exposure or release into the vascular system of substances that activate the coagulation system (procoagulants) may have a role in consumptive coagulopathies and indeed subsequent thrombus formation. In light of the high incidence of thromboembolic disease in survivors of traumatic haemorrhage, it is important to consider the novel strategies to control haemorrhage and indeed the subsequent risk of thrombo-embolism..

Biography:

Anthony is an intensivist at the Royal Brisbane and Women's Hospital. He is an Associate Professor with the University of Queensland Medical School. Anthony is currently the ANZICS Immediate Past President and has served on the ANZICS Board and Executive since 2012. He is a senior examiner for the Fellowship of the College of Intensive Care Medicine of Australia and New Zealand. Anthony has authored eight book chapters and 53 peer reviewed publications. He is an EMST course director and senior instructor for BASIC. He is also a director of the Current Concepts in Critical Care Course and the Trauma Traps course. Anthony serves as a representative for the National Blood Authority Critical Care Group in developing the Australian Patient Blood Management Guidelines. He is a member of the National COVID-19 Clinical Evidence Taskforce Steering Committee. Anthony is a current serving officer in the Royal Australian Navy, as the Director Navy Health Reserves. He has deployed on active service on multiple occasions, including several tours to Afghanistan, the Persian Gulf, border protection, four tours to Iraq, the 2020 Bushfires and is as the Senior Medical Officer for the Operation COVID Assist Joint Task Group 629.3.

Corresponding author name: Anthony Holley

Corresponding author email:
anthony.holley@health.qld.gov.au

Procoagulopathy of Trauma- A Gift or a Curse

CAPT Anthony Holley¹

¹ Royal Australian Navy, Canberra, Australia

Trauma results in a variety of alterations to the haemostatic system that can lead to an increased risk of bleeding soon after injury and an increased risk of thrombosis later. Haemorrhage remains a leading cause of preventable death following trauma, with as many as 25% of these patients presenting with an established coagulopathy. Paradoxically survivors of trauma with massive haemorrhage may subsequently experience a potentially hypercoagulable state. The incidence of DVT associated with major trauma is variably reported as 1.8 to 58% and is subsequently complicated by pulmonary embolism in at least 2% of these individuals, with a fatality rate approaching 50% in some series. Importantly, pulmonary embolism is the third leading cause of death among patients who survive the first 24 hours after trauma. The acute coagulopathy of trauma appears to be independent of the classical "lethal" triad which is characterised by acidosis, hypothermia and dilution. Significantly patients presenting with coagulopathy have a mortality approaching 50%, but also have greater transfusion requirements, organ injury, septic complications and length of intensive care stay. The same is true of trauma patients developing venous thromboembolism in the post

Review of Humanitarian Guidelines to Ensure the Health and Well-being of Afghan Refugees on U.S. Military Bases

Dr Lynn Lieberman Lawry¹

¹Uniformed Services University, Bethesda, United States

No consent to publish abstract

Biography:

Dr Lieberman Lawry is a physician, epidemiologist and biostatistician who has twenty-eight years of experience in humanitarian aid, disaster response, development and global health implementation and research. She spent 20 years as faculty at Brigham and Women's Hospital, Harvard Medical School, and concurrently held faculty appointments with the Department of International Health, Bloomberg School of Public Health, Johns Hopkins and Uniformed Services University of the Health Sciences where she is currently an Associate Professor in Preventive Medicine and Biostatistics. She has extensive experience in dozens countries coordinating the provision of aid, facilitating development, and conducting population-based studies in conflict and post-conflict settings. Her studies elucidate the needs of populations regarding human rights, healthcare access, disease prevalence, mental health and gender based violence - utilizing these data to improve policy to address global health needs in conflict and to better understand community dynamics that lead to insecurity. She developed courses and teaches extensively at USUHS for in-resident and global health distance learning certificate students. In addition, she developed courses through the Defense Institute of Medical Operations for teaching international militaries who will serve as Peacekeepers about the prevention of sexual exploitation and abuse.

Corresponding author name: Lynn Lieberman Lawry

Corresponding author email: lynn.lawry@usuhs.edu

ROLE 2 FORWARD: A Critical Component of the Land-Based Trauma System

Nursing Officer Princess Rull¹

¹ Adf, Enoggera, Australia

On 23 January 2019, Australia's Chief of Army declared his intentions for the military to be ready now and future ready, consistent with its aim

to operate on land, from the land and across all domains, including cyber, space, maritime and air. Being ready now insinuates conducting training, allowing preparation, providing education and being equipped and organised for the range of military tasks required for the Australian Government. Being future ready alludes to the modernising, adapting and transforming against emerging threats, geopolitical challenges and advances in technology. These intentions have particularly placed Army Health capabilities under scrutiny concerning ability to provide outcomes that align with Chief of Army's intentions.

The purpose of this presentation is to highlight Army Health's specific capability in the Role 2 Forward (R2F). This evolving Forward Resuscitation and Damage Control Surgery asset is designed to bring specialist-led damage control intervention closer to the point of wounding, and is currently under Command of 1 Surgical Company, 2 Health Battalion in Brisbane. This presentation will highlight R2F current capability and future direction and its potential contribution to the improvement of trauma care for battle casualties.

Through multiple internal and supporting Exercises, the 2HB R2F capability will test its responsiveness to tasks, identify integrated work-force requirements, logistical considerations, capability limitations, deployment options and verify administrative and clinical processes. This presentation will expand on the following points:

1. Concept – Role within the battlefield, multiple brick layout, adapt Standard Operating Procedures (SOP) of coalition partners US Army R2F equivalent
2. Personnel – Roles and responsibilities and roles beyond clinical profession
3. Equipment – Real time diagnostics, Surgical instruments
4. Transport – Self deployable, Bushmasters
5. SOP – Standard drills, patient documentation and casualty tracking
6. Clinical Logistics/Governance – Blood management and administration, re-supply capability

The presentation will outline the importance of training and how to bridge the gaps within the capability. This will ensure that R2F is constantly adapting to the ever-changing military tasks and achieve Commander's intent to operate on land, from the land and across all domains.

Biography:

Princess Rull was born in Manila, Philippines. At the age of eight, Princess Rull and her family moved to Brisbane, Queensland where she completed her Primary, Secondary and Tertiary schooling and later employed as a Registered Nurse at Queensland Children's Hospital and Royal Children's Hospital in Melbourne.

In 2018, Princess Rull enlisted in the Australian Regular Army as a General Entry Nursing Officer. She pursued a career in Defence in order to provide Australia, the country that offered her family abundant of opportunities, her life and nursing skills.

Princess Rull was posted to 11 Close Health Company as a Treatment Team Nurse, 2nd General Health as Operating Theatre OIC and now 2nd Health Battalion as Role 2 Forward OIC. Tasks included Clinical Training Officer, Equipment management, Clinical Governance, Operation Augury, Operation Covid Assist NSW immunisation, Covid Assist Melbourne.

CAPT Rull is studying Master of Nursing, in Education, and Art of Coaching Diploma. Princess Rull has a serving brother in the Infantry Reserves Corps. Princess Rull enjoys an active lifestyle and spending time with her family and friends. Princess Rull enjoys volunteering for charitable organisations such as Cancer Council, Australian Red Cross, Leukaemia Foundation, Braveheart, Act for Kids and many more.

Corresponding author name: Princess Rull

Corresponding author email: princessrull@gmail.com

SafeSide in Defence: Enhancing Suicide Prevention Culture, Practice, and Education

Ms Jennifer Harvey, Associate Professor
Anthony Pisani^{1,3}, Ms Kirsti Claymore², Colonel
Laura Sinclair², Ms Emily Jallat², Ms. Nikki
Jamieson²

¹ University Of Rochester, Rochester, United States,

² Department of Defence, Canberra, Australia

³ SafeSide Australia, Brisbane, Australia

Defence has embarked on a major initiative to strengthen suicide prevention that will touch all personnel. In this session, leaders from Joint Health Command, ADF Centre for Mental Health, and SafeSide Prevention will present alongside lived experience advocates about plans toward: strengthening organisational culture of safety and prevention; implementing effective policies and

practices; and continuously engaging the workforce with role-specific education.

The SafeSide project builds upon the strong foundation of the existing ADF Suicide Prevention Programme (SPP), which includes: learning initiatives; policy and governance; Defence employee benefits; and environmental products and resource. Each will be optimised consistent with innovative best practice, and with other government entities (DVA/ Open Arms, NSW Health, Queensland Health) that have adopted all or part of the SafeSide Framework.

Organisational culture of safety and prevention. Perspectives on suicide prevention have widened beyond individuals' skills and practices toward suicide-safer systems. Engaged leadership within Health and Command and strong involvement from 'experts by experience' is key. Participation from individuals who have experienced suicide or mental health concerns is critical for addressing gaps in messaging and member experience. This involvement is consistent with objectives of the recently established Defence Lived Experience Program.

A culture that supports suicide prevention must also promote healing, learning, and improvement after suicide-related incidents and deaths. Pursuing the bold goal of reducing suicide requires safety and support for members, friends, and family if loss does occur. Informed by recent advances in postvention, the project will update post-incident policy, procedures, and resources.

Best practices and policies. The SafeSide Framework for Recovery Oriented Suicide Prevention provides a map of best practices and a common language organisationwide. We reviewed administrative, principle-based, and procedural-focused policies of the Defence Health Manual as well as those pertaining to welfare boards and member support. A subgroup with broad Defence representation will consider 11 key practice areas identified by this review. Revisions will be informed by the interim report of the Royal Commission into Defence and Veteran Suicide anticipated in August.

Customised workforce education and development. SafeSide's approach to education (Pisani et al., 2012; Cross et al. 2019; Pisani et al. 2021; Conner et al. 2013) is founded on evidence that practice and culture change requires shared understanding and educational experiences across roles and disciplines. SafeSide programs utilise video-guided modules that groups complete together, along with ongoing opportunities for learning interactions in and outside the organisation. Bull (DVA unpublished report, 2021) found that Open Arms clinicians and peers felt

a greater sense of belonging to the organisations as a result of cross-disciplinary group interaction around the SafeSide Framework.

Our project will tailor the SafeSide program to the unique settings and dilemmas faced within Defence. To begin customisation, we held six feedback sessions with 26 mental health and 21 primary health staff using the standard program. Participants showed marked improvements on research-based self-efficacy measures, especially: “ability to develop person-specific safety plans” and “extend support to those at risk beyond when I am in contact with them.” More than 85% positively endorsed the ability to transfer learning into practice. The major exception was that 40% positively endorsed: “situations used in this workshop are very similar to those I encounter at my job.” This expected finding validated the need for Defence customisation. Similar data will be gathered for non-health programming. The project includes updated mandatory awareness training to enhance suicide protective norms, connection, and resources (Wyman et al 2020) via engaging testimonials and conversations.

Biography:

Colonel Laura Sinclair, Acting Director of General Health Policy, Programs & Assurance, is a psychologist with vast operational experience including multiple tours in the Middle East. Colonel Sinclair was a recipient of the Conspicuous Service Cross (CSC) for command and leadership of the Joint Health Unit North Queensland.

Ms. Kirsti Claymore has been Defence Lived Experience Program Manager role since January 2022 after serving 30+ years in the Australian Army.

Jennifer Harvey, Acting Deputy Director and Assistant Director Health Workforce Development, ADF Centre for Mental Health, is an experienced psychologist and educator with 25 years' experience.

Ms. Nikki Jamieson, Assistant Director of the Defence Suicide Prevention Programme, is a suicidologist and social worker specialising in moral injury and suicide.

Dr. Tony Pisani, Associate Professor at the Center for the Study and Prevention of Suicide at the University of Rochester and the Founder of SafeSide Prevention. He is an international leader in suicide prevention education and consultation.

Corresponding author name: Anthony R. Pisani

Corresponding author email:
anthony_pisani@urmc.rochester.edu

Seeking a preferred model for navy mental health nurses

CAPT(RAN) David West^{1,2}

¹ Royal Australian Navy, Australia

² Flinders & Upper North Local Health Network, Port Augusta, Australia

Background

The Australian Defence Force (ADF) is committed to having an integrated qualified and credentialed mental health workforce. The Defence Health Manual is ‘agnostic’ about what discipline provides mental health care for our members, but for historical reasons it is mostly Army psychologists who lead mental health care in the ADF. This is in stark contrast with the multi-disciplinary manner in which the Australian community and our allied navies receive mental health care.

Objectives

To determine a suitable model that is consistent with clinical best practice and the maritime environment to sustain uniformed mental health nurses (MHNs) in the Royal Australian Navy (RAN).

Methods

The authors will compare two international navies' models of engaging uniformed MHNs to provide specialist mental health clinical services. This will then be contrasted with the current limited practice model for the Maritime Operational Health Unit.

Findings

The United Kingdom and Canadian navies have integrated multidisciplinary mental health clinicians within their health service structures. MHNs make up the majority of clinicians in their mental health services in contrast with the ADF experience. Both navies have a paradigm of uniformed MHNs providing the majority of clinical services which is consistent with established best practice, contributing to a multidisciplinary team of clinicians.

Conclusions

The RAN has the opportunity of incorporating uniformed MHNs, providing specialist care to support serving members which may mitigate against mental disability after their service. Navy MHNs can work alongside psychiatrists and psychologists to integrate a model of care that is aligned with current standards of best practice.

Biography:

Captain David West RAN is a Naval Mental Health Nurse. He trained as a General Nurse, graduating in 1982 and later qualified in Perioperative Nursing and Psychiatric Nursing. He holds a Graduate Certificate in Community Mental Health from Flinders University and a Certificate of Traumatic Stress Syndromes from University of Melbourne. He also has a vocational qualification in Government Investigation. He has extensive clinical and operational experience managing a range of inpatient and community mental health services in country South Australia.

He has been an Australian Defence Force (ADF) Reservist since 1978 joining 3RNSWR as an infantry soldier. He has come through the ranks and changed over to Navy in 1988. He has a Defence qualification in military leadership from the Australian Defence Command and Staff College.

He has served as part of the mental health screening (RtAPS) teams on HMA Ships returning from operations in the Middle East Area of Operations, and Team Leader for RtAPS on return from Operation Sumatra Assist II and Operation Resolute.

Captain West's civilian role is the Director of Mental Health for Flinders & Upper North Local Health Network, covering the northeast third of country South Australia.

Corresponding author name: David West

Corresponding author email: david.west@sa.gov.au

Servicewomen's experiences of managing their pelvic health

Dr Kate Freire¹, Dr Simone O'Shea¹, Professor Rod Pope^{1,2}, Professor Rob Orr²

¹ Charles Sturt University, Australia

² Bond University, Australia

Background

The growing female representation in the Australian Defence Force (ADF) necessitates a focus upon health areas where men and women differ to ensure appropriate prevention strategies and healthcare are provided. Genitourinary health is one of these areas.

Aim

The aim of this investigation was to explore the impacts of genitourinary health issues on ADF women, and their experiences of managing their pelvic health in occupational settings.

Method

The study was part of a mixed methods study which explored the genitourinary health issues experienced by biological servicewomen in the ADF. Semi-structured telephone interviews were conducted in 2020. Six servicewomen and two veterans took part. This presentation focuses on the findings from the interviews with the six currently serving servicewomen. A systematic thematic analysis of the interviews was conducted by identifying and coding responses in each interview transcript that addressed the study aim. Codes were then refined into themes by identifying commonalities and differences in responses across the data set.

Results

Servicewomen reported moderating their fluid consumption and manipulating their menstrual cycle because they worked in contexts where toilet access and privacy were limited. They described occupational contexts where, due to operational requirements, service personnel were expected to work without access to toilets or time for breaks for four or more hours. Some servicewomen discussed how they had little knowledge about maintaining pelvic health when they joined the ADF, and how the predominantly male environment stifled opportunities to identify norms of female pelvic health. A workplace culture where women felt they could not 'be seen as a girl', low levels of insight into norms, and limited prevention education and strategies to support management of female pelvic health issues in the ADF contributed to some servicewomen self-managing significant pelvic health conditions prior to seeking treatment. They utilised strategies to self-manage their symptoms in the workplace, including some that may have negatively impacted their health and wellbeing, such as restricting fluid intake and limiting their physical activity levels. Servicewomen reported that the doctors they saw in the ADF were keen to provide access to specialist care. This was beneficial, as it was not until they consulted with medical specialists and physiotherapists that they appreciated the possible impacts of their occupational requirements on their pelvic health, e.g. bladder desensitisation from long hours without access to toilet facilities. The servicewomen were keen to provide practical suggestions to improve experiences of their fellow service personnel in maintaining pelvic health in the ADF, such as introducing questions about pelvic health into health questionnaires and education programs.

Discussion/conclusion

This study suggests workplace culture, low levels of insight into pelvic health norms, and limited

prevention and health care strategies within the ADF have contributed to servicewomen self-managing pelvic health issues using approaches that may have had significant impacts upon their health and wellbeing. Servicewomen identified several practical suggestions to highlight and improve managing pelvic health within the evolving culture in the ADF, including increased monitoring and education. Specific education suggestions included developing greater awareness of the impacts of bladder desensitisation which can result from operational demands restricting toilet access for four or more hours. Educating the entire workforce to ensure they take prompt toilet breaks when their bladder is full, when not restricted by operational requirements, may lead to procedural changes that benefit the health and wellbeing of all service personnel.

Biography:

Dr Freire is a experienced physiotherapist with over twenty years of clinical experience in the UK, US and Australia. Her clinical experience has included both occupational, musculo-skeletal and women's health physiotherapy; and work as a civilian physiotherapist in Australia. She works as a Research Fellow at Three Rivers Department of Rural Health, Charles Sturt University with a particular focus on participatory and qualitative research.

Corresponding author name: Kate Freire

Corresponding author email: kfreire@csu.edu.au

Smoking Prevalence and its Determinants in the Australian Defence Force

Dr Jessica Marshall¹, Richard Beaton, Nisha Changela, Clare Whittingham, Dr Shahd Al-Janabi, Dr Christina Wilkinson

¹ Joint Health Command, Australia

No consent to publish abstract

Biography:

Dr Jessica Marshall completed her Doctorate investigating the genetic and pharmacological targeting of Heat Shock Protein 72 on a novel mouse model of Alzheimer's disease. Her research was funded by the Australian Dementia Research Foundation, in affiliation with the Baker Heart and Diabetes Institute and the Florey Institute of Neuroscience and Mental Health. Since joining the Department of Defence, Jessica has worked in the National Security space and as a Capability analyst,

before moving into Joint Health Command as a Health Insights Officer. Here, she analyses health data and health records to provide Joint Health Command with health and health business intelligence and actionable insights to inform healthcare, capability, and business operations.

Corresponding author name: J Marshall

Corresponding author email:
jessica.marshall2@defence.gov.au

Strategic health impacts of climate change on ADF personnel and operations – Modelling the demand to inform the response

CAPT Nathan George^{1,2}

¹ 3rd Health Battalion, Australian Army, Adelaide, Australia

² University of New South Wales, Kensington, Sydney, Australia

Climate change has been declared the most significant health threat of the 21st century and the most significant threat multiplier of the modern era. A national security agenda seeks to anticipate and mitigate risks to stability and prosperity through proportional and timely response. This response is achieved through strategic assessment of geopolitical, environmental, and socio-demographic risk. Systematic literature review and thematic analysis of climate related health risk demonstrated Australian preparations for the domestic and regional risks associated do not align with peer reviewed or intergovernmental organisational assessments.

To address the deficits in available planning data determined in initial phases of the research, system dynamic modelling is being employed to construct predicative models of demand on the ADF, resulting from climate related extreme weather events. Conceptually this approach requires the combination of three sub-models: ADF population, ADF available capacity in person days, and operational demand on organisational capacity associated with combat and non-combat operations. Non-combat operational demand metrics extrapolated from historical data demonstrate a clear escalation of ADF response, with variable patterns of demand, and resulting chronological complex of health impacts, based on the scale and type of climate event.

By establishing climate event profiles based on frequency and magnitude of the three key climate events which engender an ADF response (fire, flood and storms), and extrapolating on historical

personnel deployment data, a predictive model of future demand on the ADF can be produced. Iterations of this model will then be bound by parameters related to climate event type occurring in a specified geographic location within a known climate zone to shape model output which can inform the scenario-based planning required by strategic leadership and government.

The current work seeks to produce a viable predictive model through which the growing risk of climate related health impacts can be anticipated and mitigated in support of Australia's strategic agenda. Through increasing refinement, and in combination with a growing body of parallel research on the pattern of health impacts that climate events generate, modelling associated with this research seeks to inform strategic planning to produce a sustainable and effective domestic and regional response.

Biography:

CAPT Nathan George commenced his academic career through a Bachelor of Psychology with Honours in Clinical Psychology, and later transitioned to a Master of International Studies. Thesis work across these fields spanned from "the psychological and physiological tension release mechanisms of self-harm behaviours", to "the use of conventional socio-cultural intelligence collection to expedite post-conflict security and stability operations".

Seeking experience in post-conflict environments, CAPT George lived and worked with grassroots development agencies in provincial Cambodia for over two years. This experience clarified the necessity of formal training in health, security, logistics and leadership, of the type inherent to military service. Commissioned in 2014 as a General Service Officer for the Royal Australian Army Medical Corps, CAPT George served in the 1st Close Health Battalion, the Army School of Health, the Australian Army Research Centre, the 3rd Health Support Battalion, and now 3rd Health Battalion.

CAPT George was selected for the University of New South Wales Future Health Leaders Program as a candidate for a Doctorate of Public Health in 2018, and the Chief of Army Scholarship in 2020 for ongoing work on "strategic health implications of climate change on ADF personnel and operations throughout Australia and the Pacific".

Corresponding author name: Nathan George

Corresponding author email:
nathan.george@defence.gov.au

Strongyloides stercoralis infection in United Kingdom military populations

Squadron Leader William Nevin^{1,2,3,4}, Captain Jake Melhuish⁴, Captain Rebecca Wakefield⁴, Mr Romeo Toriro^{2,4}, Major Matthew Routledge⁴, Flight Lieutenant Luke Swithenbank^{1,2,4}, Major Tom Troth⁴, Mrs Jayne Jones², Surgeon Lieutenant Commander Stephen Woolley^{2,4}, Group Captain Ed Nicol^{1,4}, Group Captain Mark Dermont^{1,4,5}, Professor Nicholas Beeching², Lieutenant Colonel Lucy Lamb^{3,4}, Lieutenant Colonel Simon Guest⁴, Surgeon Commander Matt O'Shea⁴, Lieutenant Colonel Tom Fletcher^{2,4}

1 Royal Air Force, United Kingdom

2 Liverpool School of Tropical Medicine, Liverpool, United Kingdom

3 Imperial College London, London, United Kingdom

4 Defence Medical Services, United Kingdom

5 Defence Public Health Unit, United Kingdom

No consent to publish abstract

Biography:

Squadron Leader William Nevin is Medical Officer in the Royal Air Force, undertaking higher specialist training in Infectious Diseases and General Internal Medicine. He is currently a PhD candidate at Liverpool School of Tropical Medicine, and an Honorary Clinical Fellow at Imperial College London. As the Principal Investigator on the Join Well, Train Well, Leave Well Study, he is investigating screening for infectious diseases in at-risk UK military populations. He has an interest in parasitic disease, particularly Strongyloides stercoralis in military personnel, returning travellers and migrant populations.

Corresponding author name: W D Nevin

Corresponding author email: williamnevin@nhs.net

Surveillance and Characterisation of Infectious Pathogens affecting Defence Personnel (SCIP Study)

Dr Rebecca Suhr¹

1 ADFMIDI, Gallipoli Barracks, Australia

The Department of Clinical Studies and Surveillance (CSS) of the Australian Defence Force Malaria and Infectious Disease Institute (ADFMIDI), is currently

conducting a research project designed to help better understand and characterise infectious diseases of importance to ADF personnel. Combined research methodologies include; (i) analysis of existing, summary, disease-specific health data, (ii) retrospective assessment of patient disease exposure and case histories, (iii) real time investigation of disease outbreaks, (iv) laboratory molecular testing relevant to the pathogen of interest. Disease focus includes arboviruses, 'environmentally acquired' pathogens such as leptospirosis and Q fever and other notifiable infectious diseases of interest. Research methodologies and some recent results will be presented.

Biography:

Major Rebecca Suhr is an Army Medical Officer. She enlisted through the Undergraduate Medical Scheme in 2011. After completing her junior years at the Royal Melbourne Hospital, she posted to 1CHB, obtaining her FRACGP, and then 2GHB where she obtained FASLM. She is currently thoroughly enjoying a posting to ADFMIDI which is being complemented by a MPH. She has deployed on OP COVID ASSIST in 2020 and OP ACCORDION in 2021.

Corresponding author name: Samantha Nind

Surveillance approach to investigate and mitigate risk of skin and soft tissue infections in ADF training areas.

CAPT Jessica Chellappah^{1,2}, Major Rebecca Suhr¹

¹ Clinical Studies and Surveillance, ADF Malaria And Infectious Disease Institute, Brisbane, Australia

² School of Public Health, University of Queensland, Brisbane, Australia

Staphylococcus aureus (SA), also called "staph", is a bacterium that commonly colonises the human skin. Colonisation occurs in the nose of about 25 to 30 per cent of adults. SA can exist in this form without harming its host or causing symptoms. However, if there is a break in the skin from a wound, surgery or intravenous access device, or if there is a suppression of a person's immune system, SA can cause skin and soft tissue infections (SSTIs). Infections of particular concern are those caused by antibiotic Methicillin resistant SA (MRSA). Community-acquired infections of SA including MRSA have been reported among sporting teams, U.S. military cadets and adolescent camping groups. There are

no such studies conducted in the ADF. Both land-based military settings and shipboard deployments represent a high-risk environment for the spread of virulent SA strains due to crowded conditions, shared equipment, and limited opportunities for personal hygiene that facilitate colonization. Although rates of antibiotic resistance incidence in Australia is low compared to other countries, it has been on the rise due to travel and people movement, giving credence for the benefit of monitoring incidence over time.

Unusual occurrence of SSTI and antibiotic resistant SA have already been reported by Health Threat Assessment Reports on ADF Australian Training Areas 2015-2019, including training cohorts at School of Infantry in Singleton, NSW. This study is in collaboration with School of Infantry in Singleton to investigate, using a standardised sampling protocol to screen for SA and MRSA from trainees (nasal, axilla and groin carriage), personal items and commonly touched surfaces over their course of 16 weeks, to identify rates of staph carriage, the most commonly contaminated surfaces and sources of staph exposure, and to further phenotype and genotype such isolates to identify dominant strains and lineage. 96 training recruits were invited to participate. Participants were screened at Week 1 and again at Week 16 to capture pre- and post-training surveillance.

This project is ongoing and preliminary results have already suggested a baseline of approximately 75% of participants found with nasal carriage of *Staphylococcus* spp. of which 40% are SA. There was significant presence of SA isolated in gym cardio and weights room on specific equipment, in soil of range areas where simulated activities including leopard crawls are conducted, in participant accommodation on linen, towels, shower, sinks and common room area. SA was also isolated from outdoor obstacle course equipment and soil. Strains are currently being further characterised for origin and for antibiotic resistant profiles, and will be reported on during the presentation. Difference in rates between Baseline and 16 weeks will also be presented and discussed.

This study could provide valuable information to develop surveillance programs to evaluate and improve future cleaning and disinfection protocols for training sites and facilities, as well as developing soldier personal hygiene packs and health promotion programs as part of their training. The investigation could also be important and informative regarding the existence of high-level multi drug resistant *Staphylococcus aureus* infections among our ADF population and trace their origin.

Biography:

Dr Jessica Chellappah is an experienced Epidemiologist and Clinical Microbiologist. She has worked in Melbourne, VIC with Baker Heart Research Institute and Burnet Institute for over 10 years in Non-Communicable Disease research, and subsequently another 8 years as a Medical Diagnostic Scientist in Infectious Diseases with Sullivan & Nicolaides Pathology. She now serves as a Scientific Research Officer with the ADF Malaria and Infectious Disease Institute and adjunct fellow at University of Queensland, focussing on infectious disease surveillance and characterisation. Jessica is passionate about public health interventions and policy and actively works with different communities locally and internationally to improve health awareness and outcomes.

Corresponding author name: Jessica Chellappah

Corresponding author email:
jessica.chellappah@defence.gov.au

The Australian Defence Force Centre for Mental Health Second Opinion Clinic- First 200 patients

Dr Duncan Wallace^{1,2}, Dr Carla Meurk^{3,5},
Associate Professor Ed Heffernan^{3,4,5}

¹ ADF Centre For Mental Health, Mosman, Australia

² School of Psychiatry, University of NSW, Sydney, Australia

³ Queensland Centre for Mental Health Research Forensic Mental Health Group, Brisbane, Australia

⁴ Queensland Forensic Mental Health Service, Brisbane, Australia

⁵ School of Public Health, University of Queensland, Brisbane, Australia

Established in 2011 as part of the Australian Government's response to the Dunt Review of Mental Health Services in the Australian Defence Force (ADF), the Second Opinion Clinic (SOC) is a tertiary-referral service at the ADF Centre for Mental Health. Uniformed and civilian psychiatrists and psychologists perform comprehensive, one-off mental health assessments of ADF personnel with complex, chronic or difficult to treat conditions and provide expert clinical advice on diagnosis and treatment.

We report the first ten years of operation of the Second Opinion Clinic after assessing over 200 patients, including the demographic, service related, telehealth and mental health characteristics of patients.

Biography:

Dr Duncan Wallace has been a consultant psychiatrist since 1990, practising mainly in public hospitals with special interests in emergency departments, rural psychiatry, telepsychiatry and military psychiatry.

Dr Wallace has been a psychiatrist at the Australian Defence Force Centre for Mental Health since 2010. He has operational experience as a medical officer in the Navy Reserve and was promoted to Commodore in 2012.

Corresponding author name: Duncan Wallace

Corresponding author email:
duncan.wallace2@defence.gov.au

The introduction of a Nurse Practitioner led walk-in model of care designed to improve access to Defence provided health care: A quality improvement project

Mr John Mikhail¹, Major Joanne Briggs¹

¹ ACT Health Centre, Australia

Background

Access to health care services is a global guiding principle for health care systems. The introduction of Nurse Practitioners (advanced trained clinicians that bridge the nursing medical divide) globally has seen barriers to health care access fall. The Australian Defence Force has not been immune to access issues with demand for same day services often outpacing availability. In addition, traditional sick parade timings appear to have created a barrier to accessing health care for many Defence members. The incorporation of Nurse Practitioners into the ACT Health Centre is viewed as an enabler to address access to health care services by extending the traditional sick parade hours to a full day walk-in service.

Aim

To explore the impact of a Nurse Practitioner led service for unscheduled primary health care at the ACT Health Centre.

Methods

We began our quality improvement journey by developing a model of care for a Nurse Practitioner led unscheduled care service - akin to a civilian walk-in clinic - that incorporated contractor and military providers. The second step was to develop an education program that standardised the triage

process for all staff at the ACT Health Centre to align with current Joint Health Command policy. The third step involved the development of data collection tools that captured quantitative (case presentations) and qualitative (patient satisfaction survey) data points. Both data collection tools were piloted and revised prior to the official opening of the ACT Health Centre in May 2021. Formal data collection occurred from 1st June 2021 – 30th June 2022.

Results

Of the 15,380 Defence members who presented to the ACT Health Centre without appointments, 12,264 were reviewed in the Unscheduled Care Clinic. Unfortunately, acute illnesses and injuries only accounted for approximately 50% of the presentations to Unscheduled Care. This was due to a lack of availability of booked appointments in Scheduled Care which impacted on the original aim of the quality improvement project. The overwhelming majority of respondents reported positive experiences with the Nurse Practitioner led service. Almost 90% of members surveyed were satisfied or strongly satisfied with the level of knowledge and competence of the Nurse Practitioners and of the care received. Over 91% of respondents reported that they would consider accessing Nurse Practitioner services in the future.

Conclusion

The introduction of the Nurse Practitioner model of care at the ACT Health Centre has seen a significant improvement in access to health care services by Defence members in the ACT. The Nurse Practitioner-led Unscheduled Care service has created an opportunity to extend the sick parade hours in support of a full day walk-in service and has ensured that the needs of Defence members with acute illnesses and injuries are triaged and treated in a timely and appropriate manner.

Biography:

John Mikhail is a contractor Nurse Practitioner for Defence with over 20 years of nursing experience. John was one of the first contracted Nurse Practitioners to work in the ACT region and has used his research skills and clinical knowledge to develop the Nurse practitioner Model of Care for contracted employees.

His interest in research led to him being the lead investigator for the quality improvement project conducted at the ACT Health Centre.

Corresponding author name: John Mikhail

Corresponding author email:
john.mikhail@defence.gov.au

The Pathway from Compliance to Capability. A new framework for safety and quality in Healthcare– Resilient Health Care... Drawing from the passion of our people to deliver on our purpose.

Group Captain Andrew Johnson¹, Wing Commander Alan Turner¹, Squadron Leader Sally Faulks¹

¹ Royal Australian Air Force, Brisbane, Australia

“As Defence moves to shape, deter, and respond to the rapid global changes affecting Australia’s interests, the Defence health system must also display agility and adapt to the future strategic environment and respond to Government priorities. The ADF Health Strategy is our response to the challenge of delivering world-class health care to our people wherever they serve. It will ensure we deliver a Defence Health System that is ready, responsive, and resilient.” ADF Health Strategy 2020-2030

Healthcare is amongst the most complex of human endeavours. Every day, healthcare is delivered in an array of settings from remote clinics to tertiary centres to Defence in operational deployments. The capability of systems continues to grow, yet they remain under pressures of demand, cost, and productivity. Our health professionals deliver outstanding care to our communities. Yet, even with the best of intentions and the commitment of the talented people who work within the systems, things go wrong.

Current reported rates of adverse events in healthcare remain high, with approximately 1 in 10 hospital admissions encountering adverse events, despite huge investment in systems safety. We have limited data in Defence, and no reason to believe that we would be doing better. Defence health professionals operate in environments that directly contribute to errors – environments where resources are often poor, time is critical and the evolving situation unpredictable.

To improve our systems, we must understand how they work, and how our people work within them. We must make them better in the real-life, confusing reality of competing demands, conflicting priorities and incomplete information, volatility, and ambiguity.

Compliance with defined standards simply isn’t enough. It doesn’t allow the agility to enable capability.

Resilient Health Care (RHC) offers an alternative understanding of how we may approach the wicked problem of improvement in health care. RHC brings together the understanding of resilience engineering with health care. At its core, it challenges us to develop a much clearer understanding of the real world of health care and the work required within it. That is “Work as Done” rather than “Work as Imagined”.

Health Care systems have characteristically been organised along hierarchical lines. RHC questions this orthodoxy and promotes an understanding of Health Care as a Complex Adaptive System (CAS). CAS are characterized by self-organisation and emergent behaviours. Perhaps this could be described as the workers getting on and delivering health care, with a focus on intent rather than process.

The new way of thinking about patient safety allows us to “engineer-in” resilience within a complex and adaptive system, that is the capacity to “get it right” despite things going wrong along the way, rather than the traditional approach to “engineer-out” risk. “Safety Two” vs “Safety One”.

RHC challenges our understanding of hierarchical management structures and operational models, and introduces some paradigm shifts into the way we view risk and safety. It allows us to identify and recognise the importance of context, flexibility, and complexity that we have considered and responded to over the years, without the framework to fully understand why some things work and others don't.

This presentation explores the tenets of Resilient Health Care, and outlines practical approaches to how we may address the issues of safety and quality in our unique Defence Health environment. We discuss how to select the right safety and quality tool for the job... and how to avoid wasting our time on measures that do not matter.

Compliance only where it is meaningful, managed within a framework of partnership for performance... a clear-eyed focus on developing our people to establish a level of capability that no measure of compliance can deliver.

Biography:

GPCAPT (Professor) Andrew Johnson MBBS, MHA, MConfMgtResol, FRACMA(Distinguished).

Andrew is the Senior Clinical Advisor of the newly-formed Clinical Governance-Air Force Cell, a Professor with the College of Medicine and Dentistry at James Cook University and an Honorary Professor with the Australian Institute of Health Innovation at Macquarie University. He is a Censor of the Royal Australasian

College of Medical Administrators and a long-term member of the Education and Training Committee. Andrew was recognised as a “Distinguished Fellow” of the College for his work in medical workforce and patient safety and has twice received international awards for safety and quality innovations. Andrew is the lead author of five book chapters, several peer-reviewed publications and conference abstracts and is regularly invited to present at national and international meetings. Recent studies in Conflict Management and Resolution have led to accreditation as a mediator and coach. His current major areas of interest are conflict competence, mentoring and coaching. After leaving the Permanent Air Force in 1995, Andrew has spent over 25 years as a hospital executive, some of that time in RAAF SR. He has re-joined Air Force as a part-timer in 2021, bringing his civilian experience in safety, quality and leadership coaching back to Defence.

Corresponding author name: Andrew Johnson

Corresponding author email:
drandrewjohnson@icloud.com

The role of Aeromedical Evacuation in the 2021 Afghanistan Non-combatant Evacuation Operation

LACW Dayna Martin¹, LACW Georgia Smith¹

¹ Royal Australian Air Force, Australia

No consent to publish abstract

Biography:

LACW Dayna Martin enlisted in the Royal Australian Air Force in 2017 as a Medical Technician. Since then she has had postings to Army School of Health and No. 3 Aeromedical Evacuation Squadron (3AMES). She deployed with 3AMES on the Afghanistan Non-combatant Evacuation Operation (NEO).

Dayna holds a Diploma of Paramedicine and a Diploma of Nursing. She is currently working towards her Bachelor of Nursing through Charles Sturt University.

Dayna lives in Sydney and in her spare time she likes to catch up with friend and go camping and fishing.

LACW Georgia Smith enlisted in the Royal Australian Navy (RAN) in 2014 as a Medic. She subsequently was posted to The Navy Ward- St Luke's Hospital, HMAS Adelaide and HMAS Waterhen. She deployed on RAN operations as part of Indo-Pacific Endeavour in 2017.

In 2019 she transferred to the Royal Australian Air Force as a Medical Technician and posted to No. 1

Expeditionary Health Squadron where in 2021 she was a part of the Afghanistan NEO mission. She then posted to 3AMES in January 2022.

Georgia holds Diploma of Paramedicine and a Diploma of Nursing.

Georgia enjoys spending quality time with her family and friends and travelling.

The Unsung Heroes – The importance of the Walking Blood Bank program and use of Low Titre Whole Blood during conflict

Ms Jullie Vidler¹

¹ 2nd Health Battalion, Enoggera, Australia

In the deployed setting, being able to maintain the ideal ratio of components remains a challenge due to logistical and storage constraints. Walking blood banks (WBB) are an invaluable resource to provide fresh whole blood (FWB) in situations where the availability of component therapy is not sufficient or effective for the resuscitation of a patient. Although the use of the WBB (also known as the emergency donor panel) is written into ADF policy for the use of type-specific blood for emergencies, its limitations can present its own challenges. The use of Low-titre O Whole Blood is widely used by many militaries like the United States who heavily rely on its use within their Ranger O Low-titre (ROLO) program. Under the guidance of the US Armed Services Blood Program and utilising the Joint Trauma Systems Clinical Practice Guidelines, Australian Scientific Officers managed the WBB Program for the multinational Role 2 Hospital based at Hamid Karzai International Airport (HKIA) in Kabul Afghanistan between the years of 2016-2021.

This presentation will explore the importance of the Walking Blood Bank Program and use of O Low-titre blood during two MASCAS events in Afghanistan in 2019. This will include the ongoing management of the donor list, activation, outcomes, problems identified and lessons learnt. It will detail current Australian policy regarding the use of FWB and identify where this policy may require updating to better support operations, increase warfighter survivability and align with our coalition partners and their policies.

This presentation will expand on the following topics:

1. What is the WBB and O Low-titre blood?
2. Limitations of type specific blood donations versus O Low-titre blood.
3. Current ADF policy on WBB from Defence Health Manual – Military Transfusion Manual.
4. Distribution of Blood Groups and expected statistics of O Low-titre blood groups within the Australian population and Australian Military population.
5. Managing the WBB at the HKIA R2.
6. Activation of the WBB in 2019 during MASCAS events in Afghanistan.
7. Problems identified and lessons learnt from the activation.
8. The potential way forward for the WBB.

The presenter was the Scientific Officer present at the two WBB activations during the MASCAS events that occurred at HKIA during 2019. She has had operational experience managing both the ADF and US Armed Services walking blood banks and will share her experiences, perspectives and the potential way forward for ADF.

Biography:

CAPT Jullie Vidler graduated from Queensland University of Technology as a Medical Scientist in 2013. She worked for 5 years in Histopathology for Sullivan Nicolaides Pathology during her University years and as a graduate. In 2015 she joined the Australian Army as a Scientific Officer. During her time in the Military she has deployed to Taji, Iraq in 2017 working in the Role 2 as a sole Scientist and to Kabul, Afghanistan in 2019 working at the American-led multi-national Role 2 at Hamid Karzai International Airport. During her deployment to Afghanistan she was involved in a large number of Mass Casualty (MASCAS) events with two requiring activation of the Walking Blood Bank and use of Low Titre O Whole Blood donations. Jullie is currently posted to 2nd Health Battalion in Brisbane.

Corresponding author name: Jullie Vidler

Corresponding author email:
jullie_vidler@hotmail.com

The weight of an all-seeing, all-knowing eye: implementation of the Wellbeing & Resilience Framework project enhancing safety and wellbeing within RAAF. A trial Peer Support Program supporting Information Warfare Intelligence

Chaplain Timothy Hodgson¹, Dr (FLTLT) Khristin Highet¹

¹ Royal Australian Air Force, Edinburgh, Australia

Closer attention has been paid towards the direction and character of military capability and warfighting adopting the use of remote warfare. This has been particularly the case when capabilities involving processing intelligence within the distributed ground system, as well as platforms employing Remotely Piloted Aircraft (RPA) and the introduction of new technologies present specific occupational hazards. Such challenges relate to abhorrent imagery exposure, as well as a deployed in garrison context where transition between the combat mindset and domestic life occurs within the same 24-hour cycle. To add, the very nature of increased target knowledge through high-resolution sensors and dwell time presents its own unique potential risks related to moral injury.

In early 2019, Information Warfare Directorate (IWD) developed the Wellbeing and Resilience Framework (WARF) project aimed to more effectively support the wellbeing of IWD Intelligence analysts, as well as optimise their occupational safety and performance. The WARF is compliant with Air Warfare Centre Safety Management Plan and Assurance Policy and is aligned with the Joint Health Command Directorate of Spiritual Health and Wellbeing and the Air Force Mental Health and Wellbeing Plan 2020-2023. The framework utilises evidence-informed, best practice from safety, medical, psychological, high performance and chaplaincy fields and is comprised of five elements: social, physical, technical and operational, spiritual, and psychological. It provides an integrated and multi-faceted approach to supporting welfare and wellbeing where all programs, concepts and mitigation efforts are aimed to target each of these elements. The desired end state is to provide a deliberate and pre-emptive effort to ensure the IWD workforce has the skills, mechanisms and resources to maintain and enhance their individual and collective wellbeing and resilience to achieve their ongoing missions.

Peer support programs have increasingly been implemented in high risk agencies to provide

workforce wellness support to employees (Levenson & Dwyer, 2003; Marks et al., 2017; Millard, 2020; Nash, 2006). Peer-based support has been specifically identified in the Air Force Mental Health and Wellbeing Plan 2020-2023 as being fundamental to building and maintaining mental health and wellbeing. In 2021, a trial of an important element of the WARF, the IWD Peer Support Program, was commenced. The embedding of a formalised peer-to-peer support wellbeing initiative within IWD Intelligence has been the first in RAAF history. Twelve Peer Support Members from 83SQN were recruited and undertook specialised and tailored training to provide an additional layer of support by individuals who are not only familiar to unit members, but have intimate knowledge of their unique occupational demands. The program was implemented to address key goals of increased overall awareness and utilisation of wellbeing supports, increased confidence in proactively utilising relationships for additional support within the workplace, and targeted wellbeing support provision during operations. In early 2022, the Peer Support Program was subsequently implemented into 460SQN. The recruitment, selection and training of additional Peer Support Members in both 83SQN and 460SQN will occur in the remainder of the year.

This presentation will cover the targeted initiatives of the WARF, including the IWD Peer Support Program. It will also seek to consider future directions of remote warfare for RAAF, the associated potential impacts on wellbeing and safety management, and possible proactive support frameworks aiming to provide a continuum of care and enable preservation of the military force.

Biography:

Dr (FLTLT) Khristin Highet, D.Psych (Clin), is a RAAF Specialist Reserve Clinical Psychologist, posted to No. 2 Expeditionary Health Squadron working within HQ IWD. She is the Lead Program Developer and Trainer for the IWD Peer Support Program (PSP). Throughout her civilian career, she has worked in clinical assessment/intervention, organisational consulting and in strategic wellbeing program development. Khristin holds a Doctor of Psychology (Clinical) degree and has been a regular guest lecturer for Flinders University in the areas of mental fitness, wellbeing, trauma awareness and managing exposure, and for the University of South Australia in relationship management.

Rev Dr (SQNLDR) Tim Hodgson, PhD, has served as a Military Chaplain for 15 years, with deployments to the Middle East, Iraq, Afghanistan, and Timor Leste. Prior to rejoining the PAF recently, Tim was the Executive Officer for UnitingCare South Australia.

He is posted to IWD and serves as their Human Performance Team/WARF Coordinator, which includes oversight of the IWD PSP. Tim is a Honorary Research Fellow with the University of Queensland, has a PhD in Moral Injury and has published in a number of peer-reviewed journals. Tim alongside Rev Dr (WGCDR) Lindsay Carey won the AMMA Sir Weary Dunlop award in 2019.

Corresponding author name: Khristin Highet

Corresponding author email:
khristin.highet@defence.gov.au

The well-being of ex-serving ADF members: a MADIP analysis

Mrs Caitlin Szigetvari¹

1 Australian Institute of Health and Welfare, Bruce, Australia

Ex-serving members of the Australian Defence Force (ADF) are an important group of people for wellbeing monitoring, as the nature of military service means their needs and outcomes can differ from those of the general population.

The unique nature of military service can enhance a person's health and wellbeing; a phenomenon known as the 'healthy soldier effect'. Military personnel are generally physically and mentally fit, receive regular medical assessments, and have access to comprehensive medical and dental treatment as a condition of service. Selection processes also mean they may be fitter than people in the broader Australian population when they enlist. However, ADF service increases the likelihood of exposure to trauma (either directly or indirectly) and affects support networks, for example, separation from family during deployment.

To help understand the well-being of ex-serving members of the ADF, AIHW, in conjunction with DVA developed a Veteran-centred model of wellbeing in 2018.

This project uses linked data to inform outcomes against five of the social determinant domains of the Veteran-centred model of well-being for the first time: education and training; social support; income and finance; employment; and housing.

To conduct the analyses, information on ex-serving ADF members obtained from the Department of Defence staff and payroll management system that contains information on all people with ADF service on or after 1 January 2001 and who separated from the ADF prior to September 2020 was used. This data was linked to the 2016 Census of Population

and Housing within the MADIP data asset, hosted by the ABS. The data was then analysed to examine key wellbeing outcomes for ex-serving ADF members.

Results of this analysis show that most ex-serving ADF members were doing well in 2016, with the majority having attained higher education qualifications, were employed, earned higher incomes, owned their own homes (including those paying mortgages), and were socially connected by living in a family type household. However, some ex-serving ADF members are not faring as well. These people are typically those who separated from the ADF involuntarily for medical reasons, have served fewer years in the ADF, and who separated from the Navy.

This is the first of an expected series of analyses based on this data linkage project which aim to investigate the social determinants of the wellbeing of veterans using the Veteran-centred model as the conceptual basis for the work.

Biography:

Caitlin is a professional data analyst with nearly 20 years' experience in the Australian Public Service and has a Bachelor of Science in Mathematics and Statistics. She has led numerous teams responsible for data acquisition, management, governance, integration and analysis to provide quality information to inform decision making. Caitlin has experience leading the ABS' health analytical work program, as well as previously leading the ABS' education and labour work programs. She is currently responsible for the Veterans' Insights and Project Unit at the AIHW, leading research projects to build a profile of the health and wealth of Australia's veteran population.

Corresponding author name: Caitlin Szigetvari

Corresponding author email:
caitlin.szigetvari@aihw.gov.au

Treating military related trauma co-occurring with substance use disorder - a quest for collaboration

Ms Lee Brient¹

1 Open Arms - veterans and families counselling, Devonport, Australia

Client presentations to Open Arms - veterans and families counselling frequently include both military related trauma and a substance use disorder – this is often referred to as having a dual-diagnosis. Such clients have commonly had considerable

involvement with specialist state-based alcohol and drug services, whose core business is treating substance use. AOD services are restricted in their practice through both policy and resources, and this often means that client trauma goes untreated. Attempting to reduce and control substance use without treating the trauma that likely underlies the clients' ill-founded attempts to manage their trauma symptoms will inevitably meet with limited success. Often a cycle of escalating trauma symptoms is combined with escalating substance use. Treatment of the trauma condition that is perpetuating the substance use disorder is often either overlooked or relegated as next in a sequential treatment modality. EMDR is a gold standard trauma treatment that has the potential to treat both disorders, however some management of the substance use is necessary. This is difficult for clients receiving treatment in the community, which is the case with the majority of Open Arms clients. Pursuit of the establishment of a collaborative care approach across services is an overarching goal, thereby ensuring provision of the support required to enable the most unwell client to engage in trauma treatment.

Biography:

I achieved General registration as a Psychologist in January 2015, after commencing as a Provisional Psychologist with the Tasmanian Alcohol and Drug Services in Launceston in Jan 2012. In June 2016 I began working with Veterans and Veterans' families Counselling Service (VVCS), in September 2019 I was selected as part of the Mental Health team for the Invictus Games, Sydney. I gained a Masters of Addictive Behaviours (Monash University) in Jan 2021. Currently my role is the Tasmanian Clinical Program Manager for Open Arms – veterans and families counselling (formerly VVCS), providing support for the Tasmanian counselling team and organisational processes, and maintaining a counselling load focussing on trauma therapy (EMDR) and substance use.

Other achievements include InPsych journal article (addiction feature edition): 'Ice and Methamphetamine use: Clinical considerations and complications', September 2017; joint Symposium presenter at APS Conference 2015 - 'AOD issues: everyone's business'; prepared and delivered webinar presentation on ICE on behalf of APS PSU interest group; paid panel member for MHPN webinar July 17th, 2019 'collaborating to recognise and address depression in cannabis users'.

My personal life revolves around my 3 adult children, my 4 grand-children, my pets (including a now 12-month-old rescue lamb), nature and music.

Corresponding author name: Lee Brient

Corresponding author email:
lee.brient@dva.gov.au

United States Veterans Benefits Administration – a global service to US Veterans and Active Duty Service Members

Doctor (PHD) Judy Swann

1 International SOS, Kingston, Australia

Introduction

It was announced in April 2022 that International SOS will support the Veterans Benefits Administration (VBA), an agency of the U.S. Department of Veterans Affairs (VA) to deliver services to US veterans and Active Duty Service Members (ADSMs) around the world.

The VBA is responsible for administering the department's programs that provide financial and other forms of assistance to veterans, their dependents, and survivors.

Discussion

Utilising our global footprint and network, International SOS will identify, recruit, train, and support carefully selected medical providers in over 37 countries around the world to conduct several specific Medical Disability Examinations in support of the Veterans Benefits Administration.

International SOS' dedicated Program Team will be fully integrated with prime contractor Leidos and their subsidiary QTC. QTC is the largest provider of disability occupational health examination services in the US. Over its 40- year history, QTC has carefully developed as the leading provider of these examinations for US based veterans and Active Duty Service Members (ADSMs). Leveraging this experience, QTC will utilise its longstanding experience, business processes, and program-specific information technology infrastructure.

The results of the overseas MDEs conducted by International SOS' Network Providers will facilitate entitlement determinations for disability compensation and pension claims, as MDEs help determine the extent of permanent impairment incurred during military service.

International SOS' Network Services Providers will perform MDEs for more than 100,000 veterans, ADSMs, their dependents, and their survivors located outside of the United States in more than

37 countries around the globe, including the Philippines, Germany, Japan, Italy, Puerto Rico and South Korea.

An extension of our support to the US military

Our support of the VBA is an extension of our substantial and long-term support of the United States military. International SOS has supported TRICARE in ensuring that Active Duty Service

Since 1998, International SOS has supported TRICARE in ensuring that over 9.5 million Active Duty Service Members and their families receive the highest quality care, no matter where their work or travels take them.

International SOS administers the TRICARE Overseas Program (TOP) benefit, delivering health care services for Active Duty Service Members (ADSMs), their family members, retirees, and other TRICARE-eligible beneficiaries in 200+ countries and territories outside the 50 United States and District of Columbia.

Conclusion

This new program highlights the critical value of International SOS' medical fitness examination line of business services and also our global network. The global footprint of International SOS and our ability to work with providers on the ground in the 37 locations will deliver easy to access services and support to this program across the world. International SOS Government Services is a key partner of the Veteran Affairs in their work outside of the United States.

Biography:

Dr Mark Parrish is the Regional Medical Director Pacific and ANZ for International SOS, responsible for all health support, consulting and advisory services across the region. He is based in Sydney.

Prior to this Mark was in London with International SOS, where he led the Northern Europe team and grew the consulting business; before this he was in Australia with International Health and Medical Services, a subsidiary of International SOS, heading up a team of 500 health professionals providing healthcare across Australia's Immigration Detention network.

Mark previously worked for Microsoft's Health Solutions Group covering the Asia and Middle East regions. He was also a Healthcare Consultant with IBM Global Business Services; CEO of North Shore Private Hospital (a large private hospital within a tertiary public teaching hospital in Sydney); General Manager of Hornsby Hospital (a major metropolitan

hospital in Northern Sydney); and had a number of roles in the Royal Australian Navy and Royal Navy around the world including the Antarctic, Arabian Gulf, Caribbean, Mediterranean and Pacific.

Mark is a keen cyclist, photographer and adventurer having travelled, explored and climbed in the Hindu Kush in Afghanistan and Pakistan, the Himalaya and the Chinese Pamirs.

Dr Judy Swann is the Head of Military Health Services at International SOS. Judy is responsible for the Defence, Paramilitary, Naval Maritime and peace-keeping sectors within the Pacific region.

Judy has a decorated career with the Australian Department of Defence. Specifically, Judy has been involved with Australia's COVID-19 response, Pacific Islands police and military forces and the Pacific Islands Maritime Security Program. Judy holds an Order of Australia Medal, several official Defence commendations and has completed doctoral studies in the police and military forces of the South Pacific.

Corresponding author name: Judy Swann

Corresponding author email:
judy.swann@internationalsos.com

Veteran homelessness - Why is that a thing?

Mr Nathan Klinge¹

¹ RSL Care SA, Australia

Andrew Russell Veteran Living (ARVL) is a homeless veteran program which aims to ensure that ex-service personnel in South Australia can access appropriate and affordable housing solutions. Since 2016 ARVL have provided well over 20,000 nights of emergency accommodation to veterans who are homeless or on the homeless spectrum.

Through ARVL much has been learnt about the pathways and "upstream" factors that contribute to a veteran's experience of homelessness, as well as for those factors that can enable a veteran to find stable and permanent housing solutions longer term.

This presentation will present data exploring:

- Upstream factors - Pathways to veteran homelessness
- Actively homes veterans - What does this population look like (service history etc)?
- Downstream effects - how do we prevent veterans from cycling back through an experiences of homelessness.

Background

ARVL provides housing options for vulnerable veterans in three ways:

- Through an emergency accommodation program designed for those that are homeless or at risk of homelessness (10 living units)
- An affordable housing portfolio designed to provide long term housing affordable solutions (38 units/homes).
- Through meaningful and purposeful relationships with selected providers from the community housing sector.

ARVL's emergency accommodation consists of 10 units, in the suburb of Sturt, Adelaide. These units are designed to provide temporary emergency accommodation for veterans who are homeless, at risk of homelessness or in need of emergency transit accommodation. The program operates with a 'housing first' approach, and is designed to provide a stable housing environment that enables pathways to be formed that can assist veterans to secure the support they need, and permanent housing solutions.

Through ARVL's emergency accommodation the veterans receive a fully furnished unit, and the length of stay will be determined on a case by case basis and will be in alignment with personal circumstances and housing needs.

With over 50% of ARVL's resident's reporting experiences of suicidal ideation, the issue of veteran homelessness is particularly relevant as the Royal Commission into Defence and Veteran Suicide progresses through its investigations.

The issue of housing instability is a growing problem for the ex-service community, but it is a problem that can be addressed.

Come along to this presentation and learn how.

Biography:

With over 23 years of full-time military experience, and now being employed as a CEO in aged care, Nathan has served in a variety of leadership, management and training positions. Nathan has served as a Director on a variety of not-for-profit boards, and he represents veteran health issues on South Australia's Veterans Advisory Council and on SA Health's Veterans Health Advisory Council. Nathan is also involved in a number of committees and working groups at the national level focused on improving outcomes for consumers in residential care.

Nathan is a passionate advocate of veteran health and wellbeing issues, particularly concerning older veterans and veterans who are homeless.

Nathan has three university-aged daughters, and for some reason he still seems to be mowing his ex-wife's lawn.

White Island Volcano Aeromedical Evacuation by the Royal Australian Air Force

Mr David-John Howarth¹

1 Royal Australian Air Force, Australia

On the 9th of December 2019, the White Island volcano located in the Bay of Plenty, north east of Whakatane, New Zealand erupted unexpectedly. At the time of the eruption, there were 47 people on the island who were visiting as tourists with local tourist companies. As a result of the eruption, there were 25 people severely injured and sadly 22 people that were killed on the island.

Rescue attempts by local emergency responses were hindered due to the volatility of the volcano. A local non-medical helicopter crew decided to fly to White Island and do their best to help others in need. Some victims were able to be flown back to Whakatane while others had to be transported via boat, a 90-minute trip to the mainland, with excruciating thermal and chemical burns. New Zealand health activated its mass casualty trauma centres and dispersed the survivors to multiple facilities across the country. Majority of the survivors were admitted to ICUs due to the extent of their injuries.

As a number of the survivors were Australian, the New Zealand Government sought to repatriate these patients back to Australia to alleviate the pressure on the New Zealand health system and to bring those people home. This resulted in the Royal Australian Air Force being tasked to activate 3 Aeromedical Evacuation Squadron to provide three Aeromedical Evacuation (AE) teams and six Military Critical care AE Teams (MCAT) to retrieve the patients utilising two C-17's and one C-130.

Four of the five patients were intubated due to inhalation and thermal burns to a significant portion of their bodies. Aircrafts departed New Zealand bound for Sydney International for the patients to then be taken to various burns units in Australia for further care and rehabilitation. The focus of inflight care included ensuring sedation continued,

pain was kept to a minimum, burns dressings were attended to and ensuring the parkland formula fluid administration was adhered to.

Once the aircraft landed in Sydney, the 3AMES clinicians provided a comprehensive handover to the local ICU staff. Handover marked the conclusion of the AE and the AE teams could stand down after almost 24 hours. The mission was able to successfully repatriate five patients to Australia within 48 hours of the event occurring.

Biography:

Corporal DJ Howarth joined the Royal Australian Air Force (RAAF) in January 2012 as an Avionics Technician. He remustered to Medical Technician (MEDTECH) in late 2013 and completed his MEDTECH training in 2015 and was posted to No. 1 Expeditionary Health Squadron (1EHS) Detachment Townsville. During this posting DJ deployed on exercises Talisman Sabre, Pitch Black and Regiment White. He was also deployed internationally on Exercise Cope North and to Operation Accordion.

On return from Operation Accordion in 2019, DJ was posted to No. 3 Aeromedical Evacuation Squadron (3AMES) Detachment Amberley and was able to combine passions for aircraft with his skills as a clinician. DJ was promoted to Corporal in 2020 and was posted to 1EHS Amberley where he was able to guide and mentor younger MEDTECH's. In 2021 CPL Howarth was selected to deploy to Red Flag Alaska, which was the first major exercise that the RAAF had participated in since the start of the COVID-19 pandemic. DJ worked closely with the Medical Officer and successfully looked after the deployed force during a highly contagious Delta wave. In 2022, DJ was posted back to 3AMES where he has taken an interest in instructing his colleagues in driver training.

Wingman-Connect: Upstream Suicide Prevention for US Air Force Personnel

Associate Professor Anthony Pisani¹, Professor Peter Wyman¹, Mr. Bryan Yates¹, Dr. Chris Goode²

¹ University Of Rochester, Rochester, USA

² United States Air Force, Pentagon, USA

Wingman-Connect (WC) is an upstream universal suicide prevention program developed with the US Air Force (USAF) that targets relationship networks of military personnel to strengthen suicide-protective functions of social networks. We will present the

rationale for upstream military suicide prevention, describe and show video of WC, share results from a rigorous randomised trial and current piloting to extend the program into operational bases, as well as preliminary work adapting the program for other settings and cultures.

US military suicide rates increased 61% from 2008–2019 and suicide is the second leading manner of death. In the US Air Force (USAF), suicide rates increased an average of 7% yearly from 2011–2019. Beyond lost lives, suicides impact decedents' families and broader networks. Up to 2/3rds of military personnel and recent veterans know a suicide decedent; those with closer bonds to decedents are at increased risk for PTSD, depression and suicidal behaviour. Current military suicide prevention focuses primarily on identifying and treating those already suicidal or high risk. Although necessary, this approach is insufficient. Among US military suicide decedents, fewer than 30% received any mental health services in the past 90 days. Efforts to increase treatment-seeking have not yielded impact on suicide rates.

We conducted a cluster RCT with 215 technical training classes randomly assigned to either WC or an active control (Wyman et al 2020). Of 1,897 Airmen, 85.7% enrolled, 1,485 completed assessments at 1- and 6-mo (93% and 84% retention). Primary outcomes: suicide risk and depression subscales of computerised adaptive test (CAT-MH 31); and military occupational impairment. Wingman-Connect trained Airmen reported lower suicide risk (ES = -0.23; p = .001) and depression (ES = -0.24; p = .002) at end of tech school. W-C trained Airmen were also 50% less likely to report corrective training (OR, 0.51). WC benefits on reduced depression were maintained after transfer to first base assignment, whereas suicide risk scores, while directionally lower, were outside significance (ES = -0.13; P = .06). WC participants were 20% less likely to report elevated depression with high probability of diagnosis at either follow-up point (OR, 0.80; P = .01), and the NNT to produce 1 fewer Airmen with elevated depression was 21. A formal test of mediation validated the network health model: cohesion, morale, positive group bonds, and healthy class norms (latent factor) was a mechanism that reduced suicide risk and depression symptoms.

We tested a social network mechanism for WC impact using Airmen's nominations of valued classmates to create social networks and network integration metrics (Wyman et al 2022). WC increased social network integration overall, with largest impact for Airmen at elevated suicide risk. For elevated risk Airmen, W-C improved all network integration metrics including 53% average gain in valued connection

nominations received from others (RR=1.53) and eliminated group isolates vs. 10% isolates among at-risk controls ($P > .035$). WC counteracted drift towards disconnection for at-risk Airmen found in the active control condition, despite no explicit intervention content targeting connections to at-risk members.

Wingman-Connect is the first universal prevention program to reduce suicidal ideation and depression symptoms in a general USAF population. Group training that builds cohesive, healthy military units is promising for upstream suicide prevention. Extension of the program to the operational Air Force is ongoing and will be tested for prevention impact on suicidal behaviour.

Biography:

Peter Wyman is Co-Director of the Center for the Study and Prevention of Suicide at the University of Rochester. He leads the Network Health Prevention Science Program, where his work is at the intersection of behavioural science, developmental epidemiology, and social network methods.

Tony Pisani is an Associate Professor of Psychiatry and Pediatrics at the Center for the Study and Prevention of Suicide at the University of Rochester. His career is devoted to preventing suicide and promoting strength, recovery, and wellbeing. Dr. Pisani's federally-funded research program and public health practice spans the prevention continuum—from upstream to crisis intervention. His models have been widely adopted in Australia.

Bryan Yates has served as project coordinator since 2015, leading logistics and liaising with Air Force Headquarters. Mr. Yates served 6 years as an active-duty US Army combat medic (deployed to Iraq and Afghanistan) and 9 years in the Army Reserves.

Chris Goode is a social psychologist and Branch Chief of the Research & Development Division for Headquarters of the USAF Integrated Resilience Directorate. He has authored numerous peer-reviewed articles and government reports. His team oversees primary prevention programs with the aim of decreasing self harm across the USAF.

Corresponding author name: Anthony R. Pisani

Corresponding author email:
anthony_pisani@urmc.rochester.edu

ADF Centre For Mental Health Second Opinion Clinic – Addiction Medicine Specialist Pilot Project

Dr Duncan Wallace^{1,2}, Major Nikola
Ognyenovits^{1,3}

¹ ADF Centre For Mental Health, Mosman, Australia

² School of Psychiatry, University of NSW, Sydney,
Australia

³ Metro North Alcohol and Drug Service, Queensland
Health, Brisbane, Australia

We describe the development of an addiction medicine specialist pilot project at the Australian Defence Force (ADF) Centre for Mental Health to provide expert services for serving members of the ADF experiencing substance use disorders and to demonstrate the effectiveness and importance of this specialty to Defence Health.

Biography:

Dr Wallace is a psychiatrist at the Australian Defence Force Centre for Mental Health, at HMAS Penguin, Sydney. He is also a Commodore in the Navy Reserve.

Major Nikola Ognyenovits is an Addiction Medicine physician. He has a strong interest in the clinical management and research in substance use disorders, behavioural addictions and associated mental health conditions, including developmental trauma, PTSD, depression and anxiety disorders. He is a medical officer in the Army Reserve and a staff specialist at the Metro North Alcohol and Drugs Service

Corresponding Author Name: Duncan Wallace

Corresponding Author Email:
duncan.wallace2@defence.gov.au

Australian Veterans of The Middle East Conflicts 2001–2014: Associations Between Environmental Exposures and Select Reproductive Health Outcomes

Dr Rachelle Warner¹, Dr Jodie Avery^{1,2},
Associate Professor Susan Neuhaus¹, Professor
Michael Davies^{1,2}

¹ University of Adelaide, Australia

² Robinson Research Institute, Adelaide, Australia

Background

Anecdotally, infertility and reproductive health concerns amongst serving female Australian Defence Force (ADF) members and veterans are perceived to be prevalent, but precise data is lacking. This research investigates the association between self-reported exposure to reproductive toxicants and adverse pregnancy outcomes in Australian Defence Force veterans who deployed to Iraq and Afghanistan during the period 2001-2009.

Methods

Utilising the Middle East Area of Operations (MEAO) Census Study data set, descriptive analyses of participants' self-reported exposure were compared with the occupational environmental monitoring data taken at their reported deployment location. Univariate analyses assessed the significance of unadjusted associations between self-reported exposures and reproductive outcomes. Descriptive statistics (means, frequencies, percentiles) were used to describe the population. And sociodemographic data and clinical data were reported.

Results

There is no systematic or consistent relationship between deployment to the MEAO and adverse pregnancy outcomes. Overall, self-reported adverse reproductive outcomes were significantly increased in veterans who deployed to both Afghanistan and Iraq ($p=0.04$) compared to those who only deployed to only one of those locations; particularly in women ($p=0.009$). Miscarriage was the most likely of these ($p=0.008$).

Conclusions

In this historical cohort study, causal inference cannot be made due to a number of methodological constraints. However, the results warrant continued investigation, especially when combined with previous findings related to pregnancy outcomes in this population, the importance of reproductive outcomes, and the potential emergence of new hazards.

Biography:

Rachelle Bonner joined the public service as a multitasking ninja, and that pretty much describes her career to date. She has deployed into the Middle East, Iraq and the Philippines, and has some experience in international and operations law, including undertaking health threat risk assessments of new weaponry. Fuelled mostly by caffeine and dogs, she is also a certified geek with a PhD in Reproductive Medicine, designs and makes wedding accessories for pets and cosplay props, and is an expert procrastinator.

Corresponding author name: Rachelle Warner

Corresponding author email:
rachelle.warner@adelaide.edu.au

Deployable health services to support military and police operations

Dr (PHD) Judy Swann

1 International SOS, Kingston, Australia

Introduction

International SOS has supported deployed military and police operations across the world since our establishment in 1985. In a range of complex, remote and conflict-affected environments from Solomon Islands to Micronesia, Kosovo to Somalia; we have deployed alongside military and police personnel from the Australian Defence Force (ADF), the Australian Federal Police (AFP), the United States Army and Marine Corps, the New Zealand Defence Force (NZDF), and military and police personnel from Fiji, Solomon Islands, Tonga, Japan, France, Indonesia, Singapore and Papua New Guinea.

Discussion

Given the nature of their deployments, military and police forces require medical providers who understand and deliver clinical excellence, but also understand the unique requirements of operational command, and are able to deploy rapidly. International SOS has provided effective medical support with rapid mobilisation for the critical operational requirements of militaries and police forces domestically within Australia, regionally within the Indo-Pacific, and globally. Our diverse support includes:

- Domestic and regional deployed paramedic support alongside ADF training exercises.
- Support to short stand-up operations including Operation AGED CARE ASSIST and Operation TONGA ASSIST through Rapid Antigen Testing and PCR tests of ADF and international troops arriving in Australia, including personnel from Japan and France.
- Dedicated clinics and range of specialised medical personnel in Papua New Guinea to support the Australian Federal Police.
- Provided medical support on-board US military vessels operating in the Pacific, averaging four weeks at sea per mission.
- Designed, deployed, staffed, equipped, and

operated a COVID-19 Medical Treatment Facility to support the UN and the Rohingya refugee crisis.

- Constructed and operated a Role 2 hospital for NATO forces deployed in Kosovo and a Role 2 hospital service in Somalia for the European Union forces.
- Embedded a tactical aeromedical support service within the UN Peacekeeping Mission in Mali, servicing over 12,000 military, 3000 police, and civilian staff.

Solomon Islands

There is, however, one experience which exemplifies our ability to rapidly meet operational needs. Solomon Islands suffered serious civil unrest in November 2021. At the request of the Government of Solomon Islands, the Australian Government led a multinational and multi-agency support effort including police and defence personnel from Australia, Fiji, New Zealand and Papua New Guinea. The Australian Defence Force (ADF) contracted International SOS to provide primary and emergency medical support, including dedicated Aero Medical Evacuation (AME) in Honiara for all personnel supporting Operation LILIA. Within four days of contract execution, International SOS deployed a full medical team and 85kg of medical equipment and consumables to Honiara on a Royal Australian Air Force flight. Our medical team provides primary and resuscitative healthcare, medical evacuations to Australia, and has recently supported Rapid Antigen Testing of Solomon Island nationals following a recent COVID-19 outbreak.

Conclusion

Leveraging our unique experiences and operational understanding built through many years of supporting militaries and police forces domestically, regionally, and globally; we are able to provide quick and effective health support services suitable to achieving optimal medical and preventative outcomes.

Biography:

Dr. Judy Swann is the Head of Military Health Services at International SOS. Judy is responsible for the Defence, Paramilitary, Naval Maritime and peace-keeping sectors within the Pacific region.

Judy has a decorated career with the Australian Department of Defence. Specifically, Judy has been involved with Australia's COVID-19 response, Pacific Islands police and military forces and the Pacific Islands Maritime Security Program. Judy holds an

Order of Australia Medal, several official Defence commendations and has completed doctoral studies in the police and military forces of the South Pacific.

Corresponding author name: Judy Swann

Corresponding author email:
judy.swann@internationalsos.com

Happy Soldiers Soldier-on: Are improved health and wellbeing outcomes associated with improved retention in Soldier Recovery Centre participants?

Major Jeff Kolka¹

1 Australian Army, Brisbane, Australia

Soldier Recovery Centre – Brisbane (SRC-B) delivers return to work programs (RTWP) designed to assist complex wounded, injured and/or ill (WII) personnel recover by improving physical and non-physical health and wellbeing. The primary purpose of the RTWP is to support members to return to a deployable Medical Employment Classification (MEC) in order for them to continue serving within the ADF.

Evaluation of the RTWP demonstrates that the program does indeed support recovery, with significant improvements in physical and non-physical health for participants who complete the eight week program. The assumption has been that improving a participant's health would lead to improved retention rates of WII members. However, there is no empirical data supporting the assumption the RTWP improves retention of recovered participants.

A detailed review of retention of RTWP participants completing the program between July 2020 and December 2021 was conducted with the aim of determining the effect of the course on retention rates. Secondary to this was the investigation of health and wellbeing outcomes and their association with likelihood of retention within the ADF. Health and wellbeing in participants was measured using the Functional Movement Screen (FMS), World Health Organisation 5-point Wellbeing Index (WHO-5), Resilience Scale for Adults (RSA) and Brief Resilience Scale (BRS).

This inquiry found that 56% of all complex WII members who complete the RTWP continue to serve within the ADF. Male and female participants with physical injuries only had similar rates of retention within service, however males with a non-physical

component to their injury/illness were far more likely to be retained compared to females with a non-physical component. Further investigation of pre and post RTWP health outcomes indicated there was significant improvements across all measures in both members who have been retained within the ADF and in members who have been medically transitioned.

Despite the lowest retention rate across these four sub-groups, females with a non-physical injury or illness had the largest increase across all four measures following RTWP participation, followed by females with a physical injury only. However females with a non-physical injury or illness had the lowest scores across the FMS, WHO-5 and RSA prior to commencing the RTWP. This indicates females with a non-physical component to their injury or illness generally had poorer health and wellbeing prior to attending SRC-B compared to other RTWP participants, however they also made greater improvements in their recovery.

Deeper analysis showed a substantial and significant relationship between pre-RTWP RSA score and successful retention, as well as smaller yet still significant associations between FMS score pre and post RTWP and WHO-5 score pre RTWP. This indicates that improvements in physical health attained at the RTWP does increase the probability of being retained within the ADF, however the biggest predictor of success is the level of resilience, psychosocial wellbeing and physical capacity prior to commencing the program.

These findings and their implications in aiding recovery and retention of complex WII ADF personnel is an important aspect informing discussion around the future direction of SRC programs. This may include earlier identification of suitable participants, different models of delivery in order to sustain improvements made during programs, and broadening delivery of SRC program concepts to a wider population to improve health and wellbeing across the trained force.

Biography:

Major Jeff Kolka was appointed as a Physiotherapy Officer within the Royal Australian Army Medical Corps following graduation from Griffith University with a Bachelor of Physiotherapy/Bachelor of Exercise Science. He has fifteen years' experience across several countries supporting the recovery of injured and ill personnel in military and civilian environments. Through his experience Major Kolka has recognised the importance of the biopsychosocial approach to overall health and wellbeing in the prevention and

management of physical and non-physical injury and illness.

Major Kolka is currently the SO2 Health at Headquarters 7th Brigade, where he manages health and wellbeing initiatives across the Brigade. Major Kolka and was previously the Officer-in-Charge of Soldier Recovery Centre – Brisbane.

Corresponding author name: Jeff Kolka

Corresponding author email:
jeffrey.kolka@defence.gov.au

Health Strategy Office - Baseline Report and Benefits Framework

Pahlia Kenny¹, Mr Payne Li

1 Australian Defence Force, Australia

The Baseline Report evaluates the alignment of activities within the Defence Health System to the ADF Health Strategy (the Strategy). Prior to the Baseline Report, there was no centralised platform that provided an enterprise wide view of alignment to the ADF Health Strategy. Once finalised, the Baseline Report can be leveraged to inform with enterprise wide decisions and Commander's intent.

Central to the methodology of the Baseline Report, is the strategic alignment score which is also indicative to the strength of activity alignment to the Strategy. The strategic alignment score is comprised of 4 factors: strategic alignment strength, stakeholder impact, organisational criticality and benefits impact. Holistically, these 4 factors combine to form a strategic alignment score out of 4. Currently, this scoring has been leveraged to inform the prioritisation of high priority initiatives across the Health domain. An example is the ADF Family Health Program which is rated as a Tier 1 initiative as it has a strong alignment to the Strategy, high benefit-to-cost value, medium organisation criticality, and medium stakeholder impact, yielding a score of 3.2 out of a maximum of 4.

The baseline report ultimately provides a framework to benchmark how activities across the Defence Health System are progressing and/ or assess ongoing requirements to readjust productivity in line with the Strategy's objectives. This report provides a holistic understanding of how the ADF Health Strategy is being implemented, informing key insights into the operations of the Defence Health System.

The Defence Health System Benefits Framework (the framework) provides a structured approach

to identify, define, manage and realise benefits that Health initiatives throughout the Defence Health System seek to achieve. There is currently no standardised structured methodology for the identification, definition, managing and realising of benefits across the Defence Health System. To assess initiative progress and ensure alignment to the ADF Health Strategy, the Benefits Framework was created to provide guidance on tracking benefits in line with the Strategy. The framework was developed by leveraging the Defence Transformation Office Defence Benefits Management Framework and Toolkit, released in September, 2021.

The framework provides leading practice tools and templates, which can be used to define Benefits, Measures and metrics for projects and initiatives within the Defence Health System. It is underpinned by 8 key principles and the ADF Health Strategy, ensuring that benefits are both aligned with the Strategy and contribute towards achieving the Strategy. Key principles of the framework include:

- SMART: Fundamental to metrics definition is the acronym – SMART (specific, measurable, attainable, relevant and timebound)
- Data: Data is leveraged throughout the measurement of a baseline metric, interim target, and a final target
- Realisation schedule: A realisation schedule can be used by initiative leads to periodically assess progress on benefits and associated metrics

The benefits framework provides a structured approach to assessing benefits and the extent to which a benefit has been achieved in line with the ADF Health Strategy.

Biography:

Payne has extensive experience in complex business transformations. He has successfully delivered several large-scale projects and consulted on projects within various industries ranging from Healthcare to Power & Utilities. Payne current is partnering with Department of Defence include leading a Joint Health Command project on Benefits and baseline reporting, establishing a Benefits Management Framework along with providing procurement and commercial management support for defence materiel projects.

Corresponding author name: Payne Li

Corresponding author email:
Payne.Li@defence.gov.au

Health Strategy Office - Continuous Improvement and Innovation

Pahlia Kenny¹, Mr Jericho Banaticla

¹ Australian Defence Force, Australia

The Continuous Improvement and Innovation (CII) stream within the Health Strategy Office (HSO) is a new capability within Joint Health Command (JHC). CII is responsible for the delivery of end-to-end business improvement and innovation activities across JHC. CII aims to foster a continuous improvement culture within JHC and challenge and improve the productivity, efficiency and resilience of healthcare.

CII promotes and implements the use of the CII framework across JHC. Improvement ideas move through five distinct steps: (1) Idea Generation through Design Thinking, (2) Idea Assessment, (3) Idea Approval using program management office recommended processes, (4) Initiative Implementation using CI scoping tools to understand the problem and project management methodologies to implement prioritised solutions, and (5) Initiative Evaluation involving CII project benefits measurement and stakeholder impact validation.

This presentation will showcase a number of implemented joint CII initiatives with Bupa, as well as future improvement initiatives identified on the JHC CII register.

Biography:

Jericho is an experienced continuous improvement manager with qualifications in business management (MBA), process engineering, and agile project management. Jericho led both strategic and BAULEAN continuous improvement projects in the automotive industry and eventually leveraged this experience to pivot into health continuous improvement / project management. He is currently the Deputy Director Continuous Improvement and Innovation of Joint Health Command.

Corresponding author name: Jericho Banaticla

Corresponding author email:
jericho.banaticla@defence.gov.au

Health Strategy Office - Establishing the Program Management Office

Pahlia Kenny¹

¹ Australian Defence Force, Australia

Defence is committed to ensuring that its health system delivers world class health care to ADF members wherever they serve. To do this, Joint Health Command (JHC) has developed the ADF Health Strategy (Strategy) providing direction, ambition and approach to meet the health capability and service outcomes required over the next 10 year period (2020-2030). It also necessitates the assessment of the relevance and appropriateness of health-related program and project proposals across Defence. Additionally, it will guide resourcing decisions to ensure that activities (including business as usual activities) align with the strategic objectives of the Strategy. The Strategy was signed by the Chief of the Defence in March 2021.

The Health Strategy Office (HSO) has been established as a steward of the Strategy, helping to realise a Defence Health System (DHS) that is ready, responsive and resilient. The purpose of the HSO is to deliver agile, scalable and innovative solutions, learning operational lessons and identifying how best to adapt to pressures and challenges in contemporary and future operating environments, in alignment with the Strategy. The HSO is to provide the intelligence, strategic insights, analysis and governance required to ensure health-related initiatives are aligned and contribute toward Strategy realisation. This DHS transformation shifts JHC toward a command-responsive, member-centric and operationally focused health care model. The HSO acts as a conduit between the ADF Health Select Committee (HSC) of the Defence People Committee and Services and Groups. The HSC's role is to set the strategic direction for the DHS to align with the capability requirements of the ADF. The HSO assists to provide the HSC with information needed to facilitate decisions on the appropriate balance and priority of health project and programs across ADF, and ensures initiatives align with the Strategy.

An opportunity was identified to increase capability in project management and governance as well as provide support to JHC to align project outcomes to the Strategy. Furthermore, there has been unrealised opportunity for project teams to collaborate and synergise with each other to support positive outcomes. The HSO is establishing a Program Management Office (PMO) to realise these opportunities and provide decision support and visibility to the JHC Executive Board. The PMO will produce a view on how programs and projects within JHC are being

governed and delivered in line with the Strategy. As well as this, the PMO will be responsible for defining and managing application of standardised processes, procedures and documentation within JHC as well as supporting project management capability uplift, through training and project management template development.

The proposed presentation will aim to generate an understanding and inform conference attendees about the approach to rolling out the Strategy, the benefits and functionality of the PMO and the lessons learned in the process of establishing the PMO.

Biography:

Pahlia has extensive experience in complex business and health transformations. She has led on a number of global, national, state-wide and local projects within various industries ranging from Healthcare to Industrial Strategy, receiving United Nations and Order of the British Empire recognition. Pahlia is currently partnering with Department of Defence including leading on a Garrison Health Smarter Service Delivery program, establishing a Program Management Office for Joint Health Command and developing Strategic Communications and Engagement strategies.

Corresponding author name: Pahlia Kenny

Corresponding author email:
pahlia.kenny@defence.gov.au

Improving paediatric care in conflict zones: Thematic review of published literature

Dr Kevin McCaffery¹

¹ Queensland Health, Brisbane, Australia

Aim

Provision of care to ill or injured children in conflict zones by military healthcare resources is regulated by rules of entitlement, commonly with the intention of preserving life, limb, or vision. A review of recent literature was undertaken to quantify the scope of such intervention.

Introduction

As the nature of armed conflict has evolved over time in response to geopolitical factors and technological advances, civilians – including children – now comprise the vast majority of casualties. While children in conflict zones frequently suffer extreme morbidity, complexities such as local healthcare infrastructure degradation, constraints on the safe

deployment of humanitarian organisations and the obligations imposed by International Humanitarian Law ensure that a proportion of paediatric care must invariably be met by military health services.

Major General John Pearn, distinguished paediatrician, and former Surgeon-General to the Australian Defence Force (ADF), published extensively over three decades on the paediatric consequence of armed conflict and terrorist action. His advocacy included many case presentations detailing critical aid rendered to injured children by the ADF across numerous deployments.

Given the passage of time, heightened geopolitical tensions and active conflict in Ukraine and elsewhere it seemed timely to review published literature to quantify the scale, scope and nature of care deployed ADF members at all tiers of healthcare provision may be required to deliver. This data will establish a baseline against which to evaluate ADF experience and may identify opportunities for capability improvement.

Methods

PubMed, Clinical Knowledge Network and Google Scholar were searched using combinations of the following keywords: children, pediatric, paediatric, conflict, war, trauma, Iraq, Afghanistan, and Syria. Identified studies had their reference list searched for additional relevant studies.

Studies were considered for inclusion if they were primarily paediatric, described illness and injury patterns occurring in active conflict zones and detailed management provided by military forces. Reports from humanitarian aid or disaster relief deployments were excluded.

Results

Sixteen studies meeting the above criteria were selected with the intention of providing a broad overview of the topic. Reports from Iraq and Afghanistan predominated, though one study included data from Syria, Mali, the Central African Republic, and Chad.

Key findings included:

- Children comprised approximately 11% of total admissions but accounted for a greater percentage of bed-days and procedures. All age groups were encountered, and all tiers of care provision were involved.
- Blast injuries and penetrating trauma predominated. Blunt trauma and burns were less common.
- Oxygen administration and vascular access were the commonest interventions, though

some studies identified potential suboptimal management related to procedural difficulty.

- Survival rates in the 90-98% range were reported.
- Reports used a range of databases with no overarching standardisation of dataset.
- Studies frequently concluded a need for improved paediatric-focused training, experience, and equipment.
- Coalition partners have identified and implemented measures to improve paediatric care through enhanced training, equipment, and access to specialised expertise.

Discussion

Children present commonly to all tiers of military healthcare capability, with bed-days and procedures-per-patient exceeding those required by adult civilians and combatants. Patterns of injury differ from those typically seen in combatants, and from that encountered in civilian practice.

A lack of standardisation of datasets hampers rigorous analysis of the topic. Additionally, failure to capture key metrics leads to distortion of some critical outcomes.

Improving paediatric capability is a common theme in the literature. Recognising this, both the United States and the United Kingdom have already implemented measures including improved training, provision of appropriate equipment and drug formularies, access to specialised paediatric assistance via telemedicine and in some cases deployment of qualified paediatric staff.

Biography:

Kevin is a Paediatric Intensive Care Specialist based full-time in the Queensland Children's Hospital, Brisbane.

After graduating from Aberdeen University, initial training as a Paediatrician was followed by subspecialty accreditation in Paediatric Intensive Care medicine in both the UK and Australia.

Longstanding interests in healthcare delivery in austere and extreme environments led to the completion of a Fellowship in Wilderness Medicine and more latterly in joining the Australian Defence Force as an Army Reserve officer.

Current research interests revolve around improving the care of patients of all ages in medically austere environments.

Corresponding author name: Dr Kevin McCaffery

Corresponding author email:
kevin.mccaffery@gmail.com

Improving respiratory support in combat zones and other medically austere environments: The McCaffery circuit

Dr Kevin McCaffery¹, Coll McCaffery²,
Professor Marcus Watson³, Paul Flick⁴

¹ Queensland Health, Brisbane, Australia

² West Moreton Anglican College, Ipswich, Australia

³ University of Queensland, St Lucia, Brisbane, Australia

⁴ CSIRO, Brisbane, Australia

Aim

To develop a simple, efficacious non-invasive respiratory support device designed for use in medically austere environments.

Introduction

Hypoxaemia in combat zones typically involves lung injury from blunt or penetrating trauma from any cause or directly from blast overpressure.

First-line management involves the provision of supplemental oxygen to breathing patients. However, optimal management would utilise positive end-expiratory pressure (PEEP) once pneumothorax is excluded or adequately managed.

Desirable features of a device designed for use in medically austere environments, including combat zones, would comprise: efficient provision of variable fraction inspired oxygen (FiO₂) up to high concentrations; provision of reliable, titratable PEEP; simplicity of use; modularity (utilising commonly available parts and with the ability to replace components or reuse after cleaning); broad applicability across age groups; low weight and bulk; low cost.

This study aimed to develop a respiratory support device with the above characteristics.

Methods

A rapid prototyping methodology generated six manifold variants which accepted standard respiratory circuit components to construct a Mapleson C-variant breathing circuit. Manifolds were 3D printed by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and subjected to a human-factors-based review process.

The most capable variant (Prototype 5) proceeded to clinical pilot study testing.

Following Institutional Ethics committee approval, the circuit was evaluated in ten healthy volunteers breathing quietly at rest. Oxygen inflow (0, 3, 5, 10, 15L/min) was varied every ten minutes in a randomised order with the volunteer blinded to gas flow rate. Continuous monitoring comprised respiratory rate, FiO₂, end-tidal CO₂, transcutaneous pCO₂ (TCpCO₂) and SaO₂. The first two minutes on each gas flow allowed equilibration to the new baseline, with values recorded every minute for the final eight minutes. The protocol was undertaken twice, once with a 0.5L reservoir and once using a 1L reservoir bag, again in randomised order.

Results

The McCaffery circuit delivered increasing FiO₂ with increasing oxygen inflow, up to 91.5% at 15L/min oxygen flow with a 1L reservoir bag. At any given oxygen flow, FiO₂ using a 1L reservoir exceeded that provided by a 0.5L reservoir configuration. Volunteers breathing from a 1L reservoir circuit demonstrated small but statistically significant increased transcutaneous partial pressures of carbon dioxide (TCpCO₂) under conditions of no oxygen inflow up to inflow rates of 10L/min when compared to breathing on a 0.5L reservoir circuit. TCpCO₂ did not significantly increase at any gas inflow rate throughout the study period. The complete circuit weighs 135g, has a packaged size of 15x12x10cm and costs less than \$20 (excluding reusable 3D printed manifold).

Discussion

The McCaffery circuit met the desired design characteristics and functioned safely and efficaciously in the pilot study. Though not explicitly examined in this study, the circuit is capable of considerable sophistication in respiratory support with simple bedside modification, allowing variation in the duration of PEEP applied in expiration, augmenting FiO₂ deliverable and rendering the device suitable for use in children. Future studies aim to quantify device operating characteristics definitively.

Biography:

Kevin is a Paediatric Intensive Care Specialist based full-time in the Queensland Children's Hospital, Brisbane.

After graduating from Aberdeen University, initial training as a Paediatrician was followed by subspecialty accreditation in Paediatric Intensive Care medicine in both the UK and Australia.

Longstanding interests in healthcare delivery in austere and extreme environments led to the completion of a Fellowship in Wilderness Medicine and more latterly in joining the Australian Defence Force as an Army Reserve officer.

Current research interests revolve around improving the care of patients of all ages in medically austere environments.

Corresponding author name: Dr Kevin McCaffery

Corresponding author email:
kevin.mccaffery@gmail.com

Introducing the Health Strategy Office

Pahlia Kenny¹, Miss Anika Nawar, Mr Gavin Chee, Mr Callan MacLeod, Mr Alfie Killigrew, Miss Alice Youn

1 Australian Defence Force, Australia

Defence is committed to ensuring that its health system delivers world class health care to ADF members wherever they serve. To do this, Joint Health Command (JHC) has developed the ADF Health Strategy (Strategy) providing direction, ambition and approach to meet the health capability and service outcomes required over the next 10-year period (2020-2030). It also necessitates the assessment of the relevance and appropriateness of health-related program and project proposals across Defence. Additionally, it will guide resourcing decisions to ensure that activities (including business as usual activities) align with the strategic objectives of the Strategy. The Strategy was signed by the Chief of the Defence in March 2021.

The Health Strategy Office (HSO) has been established as a steward of the Strategy, helping to realise a Defence Health System (DHS) that is ready, responsive and resilient. The purpose of the HSO is to deliver agile, scalable and innovative solutions, learning operational lessons and identifying how best to adapt to pressures and challenges in contemporary and future operating environments, in alignment with the Strategy. The HSO is to provide the intelligence, strategic insights, analysis and governance required to ensure health-related initiatives are aligned and contribute toward Strategy realisation. This DHS transformation shifts JHC toward a command-responsive, member-centric and operationally focused health care model. The HSO acts as a conduit between the ADF Health Select Committee (HSC) of the Defence People Committee

and Services and Groups. The HSC's role is to set the strategic direction for the DHS to align with the capability requirements of the ADF. The HSO assists to provide the HSC with information needed to facilitate decisions on the appropriate balance and priority of health project and programs across ADF, and ensures initiatives align with the Strategy.

The HSO focuses its effort into three key workstreams; strategic advisory, transformation and continuous improvement and innovation (CII). The strategy workstream includes activities such as initiating and developing long term strategy and driving critical strategy programs or projects that will deliver significant benefit. Transformation involves coordinating decision making and helping to manage the program with governance bodies. The CII stream involves providing intelligence on emergent strategy and embeds a learning/continuous improvement culture across the organisation.

This poster will be useful to inform conference attendees about the Strategy, the benefits of the HSO and the work that is ongoing in realising the Strategy through the HSO. It will provide background to why and how the HSO was established and the role it plays in realising the Strategy. It will also detail the various functionalities of the HSO as well as articulate the objectives and how HSO will achieve them.

Biography:

Anika has comprehensive experience in design and marketing, and, workshop facilitation for the public and private sectors. Anika has worked on numerous projects within the NGO and human services sector, creating communication artefacts using a human centred design approach. Anika is currently engaged with the Department of Defence as a Lead Communications officer, developing strategic communications for the Health Strategy Office - an office created to provide strategic insights and execute the ADF Health Strategy - as part of Joint Health Command.

Corresponding author name: Pahlia Kenny

Corresponding author email:
Pahlia.Kenny@defence.gov.au

Investigating the effects of martial arts-based breath-control training on respiratory muscle fatigue, spinal compression and pelvic floor dysfunction during heavy load carriage

Mrs Sherrilyn Walters^{1,2,3}, Dr Ben Hoffman^{1,4},
Dr Celeste Coltman⁵, Dr Dean Mills¹

1 School of Health and Medical Sciences, University of Southern Queensland, Ipswich, Australia

2 Martial Arts Research and Testing Laboratory, Toowoomba, Australia

3 School of Medicine and Dentistry, Griffith University, Gold Coast, Australia

4 School of Human Movement and Nutrition Sciences, The University of Queensland, Brisbane, Australia

5 Discipline of Sport and Exercise Science, Faculty of Health, University of Canberra, Bruce, Australia

Military personnel are regularly required to carry heavy loads on their bodies during training and operations. These loads have increased over time and the average load carried by soldiers engaged in international conflicts is now close to 50 kg. Heavy loads place increased strain on muscles and skeletal structures, often leading to fatigue and injury.

The representation of women in the military is currently increasing, and female soldiers have a higher risk of serious injury during heavy load carriage compared to male soldiers. Heavy load carriage places increased downward pressure on the pelvic floor. This may result in an increased risk of pelvic floor dysfunction in women in military occupations, and 30% of active-duty female soldiers reported urinary incontinence in a self-administered questionnaire.¹

Previous research has demonstrated that heavy loads carried on the trunk result in impaired respiratory function and lead to fatigue of the respiratory musculature including the diaphragm. Intra-abdominal pressure acts to support postural control and stabilise the spine, and is generated and constrained by the diaphragm, pelvic floor and abdominal musculature. The back is the leading site of load carriage-related injuries, with the greatest prevalence of injuries occurring in the lumbar region.² This high occurrence of injury in the lumbar region during heavy load carriage may be a result of fatigue and reduced function of the diaphragm and pelvic floor musculature, leading to reduced levels of intra-abdominal pressure and increased compression of the spine.

Inspiratory muscle training has been found to improve heavy load carriage performance. However, studies have not shown a reduction in diaphragmatic fatigue following heavy load carriage after inspiratory muscle training interventions. Due to the significant role that the diaphragm plays in the generation of intra-abdominal pressure to support and stabilise the trunk during heavy load carriage, interventions which target the control and generation of intra-abdominal pressure may have additional benefits beyond inspiratory muscle training alone.

Breath-control training, which is a component of martial arts training, may provide a greater stimulus than inspiratory muscle training to improve diaphragm strength and endurance due to its functional, whole-body nature. An investigation performed at our laboratory compared a group of nine trained martial arts practitioners with nine untrained controls to determine their ability to produce and resist forces close to their body and the associated levels of intra-abdominal pressure, pressure in the thoracic cavity and neuromuscular activation. We found that the trained martial arts practitioners produced and resisted higher normalised forces, produced higher levels of intra-abdominal pressure with respect to pressure in the thoracic cavity, had an earlier onset of intra-abdominal pressure with respect to the onset of force produced or resisted, and had greater activation of the group formed by the transverse abdominal and internal oblique muscles and the diaphragm.³ These findings indicate that martial arts training may result in an improved ability to generate and control intra-abdominal pressure to aid in force production and stabilisation of the spine.

This presentation will introduce current research, including methodology and preliminary findings, investigating whether a program based on traditional martial arts-based breath-control training can improve force production and reduce spinal compression, diaphragmatic fatigue and pelvic floor dysfunction during heavy load carriage in military personnel.

Biography:

Mrs Sherrilyn Walters is a PhD candidate at the University of Southern Queensland (UniSQ) and co-founder of the Martial Arts Research and Testing Laboratory in Queensland. Mrs Walters completed her Master of Science (Research) at UniSQ on the control of respiratory pressures and neuromuscular activation to increase force production in trained martial arts practitioners. Her current PhD project involves investigation of the effect of martial arts-based breath-control training on the control and utilisation of intra-

abdominal pressure to reduce spinal compression and pelvic floor dysfunction during heavy load carriage, and improve force production in military personnel. Mrs Walters also owns and runs the Chinese Martial Arts and Health Centre Australia with her husband, and has been practicing traditional martial arts for nearly 20 years. Her research interests involve exploring the physiological mechanisms involved in traditional martial arts training and the practical applications of this training to improve performance, health and safety in physically demanding occupations.

Corresponding author name: Sherrilyn Walters

Corresponding author email:
sherrilyn.walters@usq.edu.au

JP2060-3: The Deployable Health Support Centre. A facility to sustain the Australian Defence Force (ADF) Deployable Health Capability

Ms Amany Wahba¹, Major Mustafa Jesenkovic²

¹ Saab Australia Pty Ltd, Hawthorn, Australia

² Australian Defence Force, Russell Offices, Australia

No consent to publish abstract

Biography:

Major Jesenkovic was appointed as Regimental Sergeant Major of the 1st Health Support Battalion; Army School of Administration and Health; Army Logistic Training Centre; and as the Regimental Sergeant Major Joint Ceremonial Central Region. He has had postings as an Instructor at the Warrant Officer & Non-Commissioned Officers Wing, Canungra and was appointed as the Command Sergeant Major - Training, Forces Command since 2014. He has held the appointment as the Regimental Sergeant Major of the Royal Australian Army Medical Corps and was commissioned in 2018 and conducted the role as ADF Senior Officer at International Policy Division prior to his current position as SO2 JP2060 Phase 3, Deployable health in 2020.

Mrs. Amany Wahba trained and worked as a Medical Laboratory Scientist for 10 years in the areas of haematology, biochemistry and transfusion medicine in private pathology in Melbourne. She has held sales and diagnostics management roles within the scientific industry for 20 years and now works for Saab Australia as the Sales Director for Medical Solutions. Her current role is to provide support for the deployable health capability project JP2060- phase

3 and managing the strategic framework for Saab's Centre of Excellence to help promote Australian Industry Capability.

Old wine in new bottles: A fresh approach to medical readiness

Major Peter Zimmermann¹, Lieutenant Colonel Trent Kirk¹

¹ 1st Health Battalion, Australian Army, Darwin, Australia

Introduction

Medical readiness is complex. It is complicated by circular, confusing and at times contradictory policy frameworks. Providing clarity on 'who needs to be ready; and what they need to be ready for' is key to achieving medical readiness.

This article demonstrates the utility of a series of tools developed by 1 HB to convert data within Defence e-Health System (DeHS) reports into understandable and actionable information at the command, formation, unit, and individual level. They replace the manual interrogation of DeHS of 10-20 minutes per person; with industrial scale that can generate individual and collective data for the entirety of Army in an hour.

Background

At its core, baseline medical readiness is defined as a combination of: Military Employment Category (MEC); Dental Fitness Class (DFC); and Service-specific baseline vaccinations. Additional requirements for specific contexts are identified in respective Health Support Orders.

PMKEYS individual readiness (IR) is the only tool to communicate readiness to commanders. Analysis demonstrates a significant mismatch between PMKEYS readiness and actual medical readiness due to IR only utilising MEC and DFC.

The current process to achieve medical readiness is passive. It relies on self-identification, opportunistic engagement, or – in most cases – last minute remediation during force preparation. This leads to surging workforce requirement, confusion and higher risk for error that is compounded by inefficient means of analysing and communicating individual and collective medical readiness.

Data

Sampling conducted by 1HB over the last twelve months has revealed that the problem of medical readiness is twofold. Firstly, and primarily, it is a problem of data integrity within DeHS. Secondly, it

is a problem of absent readiness measures. Of those members reporting as not baseline ready, three data sets reveal themselves:

- absent data (false negative – requires data remediation to fix),
- incorrectly entered data (false negative – requires data remediation to fix), and
- correct data (true negative – requires medical readiness measures to fix).

Initial analysis indicates that greater than 80% of those members reporting baseline 'not ready' are false negatives. Using this analysis, targeted and proactive data remediation for the false negatives, coupled with active medical readiness measures for the true negatives will provide a path to achieving greater actual and reported medical readiness across the ADF. Further, it is likely that the efficiencies created in communicating and remediating this information will create capacity in Joint Health Command. This will benefit both readiness and care models.

Analyse, Engage, Organise, Deliver

It is proposed that remediation of medical readiness can be achieved via a period of analysis, engagement, organisation and delivery.

- Analyse. This is the tools primary purpose. It provides proactive analysis that enables rapid, force wide analysis, essentially industrialising the process. It then transforms data into actionable information via collective and individual feedback.
- Engage. Deliberate engagement between Services and JHC will achieve a collaborative approach to directed readiness.
- Organise. Using the analysis from above, JHC can undertake targeted data remediation of false negatives.
- Deliver. True negatives are remediated through medical action, supported by command directed priorities. The 1HB tools can be used to determine the workforce requirements to achieve this.

Conclusion

Medical readiness is a composite of MEC, DFC and vaccination requirements. The current process for calculating and communicating medical readiness is passive, mandrauc and inefficient. The 1 HB Medical Readiness Tool can analyse data from within DeHS on any scale to communicate medical readiness and turn the data into actionable information. Fixing medical readiness requires data remediation and

delivery of medical services. Through analysis, engagement, organisation and delivery, medical readiness can be dramatically improved across ADF.

Biography:

Major Zimmermann B Nurs, B Med, M Adv Prac Nurs (Acute), M Ed Stud, FRACGP

Major Zimmermann is currently the Senior Medical Officer of 1 HB. He was appointed to the RAANC in 2001 as a Nursing Officer. He subsequently completed his medical degree and transferred to the RAAMC as a Medical Officer. He has served with 8 CSSB, 1 HSB, 1 CSSB, 7 RAR, the Army School of Health, 1 CHB and 1 HB. He has performed numerous clinical, instructional, administrative and command roles.

Lieutenant Colonel Kirk B. Pharm, MPH, MBus, M Mil & Defence Studies

Lieutenant Colonel Kirk is the Commanding Officer of the 1st Health Battalion. He has completed postings at the 1HB, 1 CSSB, DMO, JHC, 1 CHB, HQ 7 BDE, US Army Medical Department Center and School, CMA and HQ 1 BDE. Lieutenant Colonel Kirk completed Australian Command and Staff College in 2019 as a distinguished graduate and is a graduate of the United States Army Medical Strategic Leadership Program.

Corresponding author name: Peter Zimmermann

Corresponding author email:
peter.zimmermann@defence.gov.au

The Australian Defence Force Health Strategy – A Pathway to a Ready Responsive and Resilient Defence Health System

Lieutenant Colonel Fred Parker¹

¹ Joint Health Command, , Australia

The Australian Defence Force (ADF) Health Strategy (the Strategy) is a little over a year old. Much has happened over that period; the pandemic and associated response, uncertainty in the geopolitical world, regional and global security and stability issues, rising user expectations and increasing financial pressures. These are some of the drivers that will influence how the ADF and its health services operate in across the spectrum of cooperation, competition and conflict.

The Defence Health System (DHS) must display agility in adapting to the strategic environment and meeting Government priorities. The Strategy is our

response to the challenge of delivering world class health care to our people wherever they serve.

Over the next decade, Joint Health Command will lead a collaborative effort across the services, groups, health partners, industry and academia to deliver the Strategy. This will require a united approach to align the breadth of work undertaken across the enterprise to enable ADF capability through a joint health effect.

Covering multiple dimensions from research, policy, service delivery, capability and operations, the Strategy's scope encompasses health effects across the entire care continuum of Defence members from recruitment, training, deployment and transition from service.

Six interconnected pillars form the foundation of the Strategy. Supporting the pillars are seven enabling functions which, when combined with the pillars, provide a road map that will guide the custodians of the Defence Health System to prioritise and harmonise delivery of health effects.

The DHS relies on connectedness and shared responsibility. This means that members are empowered to manage their own care; Service chiefs are responsible for the health and wellbeing of their members; and the Services, Joint Operations Command and Joint Health Command (JHC) deliver care, regardless of where the member serves. This partnership between individuals, command and health elements enables a proactive DHS.

The first half of 2022 created an opportunity for JHC to breath, look back at its significant achievements, enduring and emerging challenges and focus on what is needed looking out to 2030. The result was a refresh of Strategy.

The review confirmed that the Strategy remains relevant and fit for purpose, but would benefit from adjustment to strategic objectives across horizons 2 and 3.

The ADF Health Strategy provides the direction, ambition and approach to meet directed health capability and service outcomes now and into the future. It will ensure we deliver a DHS that is ready, responsive and resilient.

Biography:

Lieutenant Colonel Fred Parker is a General Service Officer within the Royal Australian Army Medical Corps. On completion of university in Sydney he graduated as a Registered Nurse. Following a few years employed in acute care environments, he joined the Army 'just to have a look'. Over the last

28 years, he has undertaken variety of appointments across all military environments. He is currently the Deputy Director, Health Strategy Office at Joint Health Command.

The curious case of the PCCM and the missing Medical Technician protocols

Major Peter Zimmermann¹, Warrant Officer Class One Robert Cuttler¹, Warrant Officer Class One Christopher Owen²

¹ 1st Health Battalion, Australian Army, Darwin, Australia

² 4th Health Battalion, Australian Army, Townsville, Australia

Introduction

The Primary Care Clinical Manual (PCCM) was adopted by the ADF in 2012. For ADF Medical Technicians (Medics), this replaced the Advanced Medical Assistant Emergency Manual. There were many good reasons for this transition, chief amongst these was the ability to curate and maintain its own high-quality, evidence-based clinical guidelines.

The ADF determined that ADF Medics would operate under the Isolated Practice Area Paramedic (IPAP) Health Management Protocols (HMP). The election by the ADF not to identify ADF Medics as a separate entity within the PCCM, despite their very unique training and skill set, has had lasting ramifications. This article will identify key issues and will propose courses of action to provide certainty about the capability and Scope of Clinical Practice (SoCP) of ADF Medics.

Half the equation

The PCCM was developed for the delivery of primary health care in rural, remote, and isolated contexts by clinical groups who do not normally practice independently. For paramedics however, the PCCM is an extended SoCP manual. It adds to the core clinical practice documents of Queensland Ambulance Service (QAS) paramedics: Clinical Practice Guidelines (CPG), Clinical Practice Procedures and Drug Therapy Protocols (DTP).

This is reflected in the very deliberate absence of IPAP from some PCCM HMP. This ensures QAS paramedics only utilise one DTP for their pharmacological options, providing obvious safety and quality benefits.

The impact for ADF Medics is that several key PCCM HMPs are not available to them. This poses

significant risk to ADF capability and is highlighted by the following two examples:

1. PCCM HMP – Anaphylaxis adult / child (p82). IPAPs are not authorised to administer adrenaline. This is because QAS paramedics would administer as per QAS DTP Adrenaline and the QAS CPG Anaphylaxis.

Note that an IPAP may administer hydrocortisone after consulting a Medical Officer or Nurse Practitioner. This is due to hydrocortisone being an extended SoCP.

2. PCCM HMP – Acute Pain adult / child (p.32-40). IPAPs are not authorised to administer methoxyflurane, morphine or fentanyl. QAS paramedics would administer these as per the relevant QAS DTPs and QAS CPG Pain Management.

Some of these issues have been recognised by the ADF since introducing the PCCM. Many have not been successfully addressed or remain unknown. This lack of clarity is because neither Queensland Health nor the ADF publish a clear craft group summary of SoCP based on PCCM HMPs and CPGs.

Military context

Compounding this issue is that the PCCM does not meet all of the operational requirements of military clinicians. This has resulted in the development of a number of supplementary documents such as TCCC guidelines, CBRN and Army DTPs.

These in turn create confusion as to when they are applicable and how they complement the PCCM. Specific examples would be differences in TXA dosage and needle thoracocentesis anatomical landmarks.

Solutions

We propose the following as potential solutions to remediate this situation:

1. Add an appropriate term to identify ADF Medic within PCCM HMP nomenclature to make it a core practice manual.
2. Develop a Military Medicine chapter to specifically address the practice of military medicine in operational contexts.
3. Develop a SoCP matrix for each ADF clinical group that clearly maps HMPs, DTPs and other CPGs
4. Consider an alternate clinical practice manual without these issues such as the CARPA Remote Primary Health Care Manuals.

Conclusion

Military medicine is complex and chaotic. To empower ADF Medics to provide consistent, safe, and high-quality health care - clear communication is required. A single, complete clinical reference adapted for the range of military contexts will provide clarity, and give confidence to, our ADF Medic workforce.

Biography:

Major Zimmermann B Nurs, B Med, M Adv Prac Nurs (Acute), M Ed Stud, FRACGP

Major Zimmermann is currently the Senior Medical Officer of 1 HB. He was appointed to the RAANC in 2001 as a Nursing Officer. He subsequently completed his medical degree and transferred to the RAAMC as a Medical Officer. He has served with 8 CSSB, 1 HSB, 1 CSSB, 7 RAR, the Army School of Health, 1 CHB and 1 HB. He has performed numerous clinical, instructional, administrative and command roles.

WO1 Cuttler WO1 Cuttler is currently the Senior Medical Technician of 1 HB. He has served with 1 CSSB, 8/12 MDM REGT, Army School of Health, 2 HSB, 2 CAV REGT, 1 CHB, NORFORCE, EC&TD Gp, ASLO, SCMA and 1 HB where he has performed numerous clinical, instructional and staff roles.

WO1 Owen WO1 Owen is currently the Senior Medical Technician for 4 HB. He enlisted in 1998 as a Medical Technician and has completed a range clinical and instructional posts serving in the following units: JHC, 3 RAR, 6 RAR, ASH, EC&TD 1 HSB, SOI, 1 CHB and 4 HB. WO1 Owen has served as a Medical Technician on numerous international and domestic operations.

Corresponding author name: Peter Zimmermann

Corresponding author email:
peter.zimmermann@defence.gov.au

The operationalisation of clinical credentialing: a command led, clinically informed approach to capability in 1 HB

Major Peter Zimmermann¹, Major Rohan Kain¹

1 1st Health Battalion, Australian Army, Darwin, Australia

Introduction

Critical to governance and assurance is a robust clinical credentialing system. All ADF personnel who deliver health effects are required to undergo regular credentialing. We argue that current approaches to credentialing lack an operational focus, particularly in the pre-hospital environment. Credentialing

should enable operational capability, which requires Command engagement, decision and delivery.

This article presents the actions taken by the 1st Health Battalion (1 HB) to transform its clinical credentialing system to refocus on military capability and mission success. The premise of the 1 HB credentialing system is that it is more than just clinical readiness or a retrospective box ticking process. It is a health capability management process that is command led, technical chain informed, data driven, and future focussed.

The 'Why'

It is important to understand the why in order to develop logical, coherent systems. Quite rightly, credentialing has sought to adopt contemporary civilian practices; however, has lacked rationalisation, adaptation or contextualising to the operational environment.

Military purpose. Accepting that 'health is not the mission' (usually) provides the impetus to refocus thinking to ensure combat power and tempo is maintained. Through the lens of military purpose, Commanders and clinicians are empowered to make sound military decisions. This also enables reflection on where health may be constraining combat operations in an attempt to achieve optimal over suitable.

Command led. In a military context, the responsibility for the delivery of safe, high-quality healthcare rests with the Commanding Officer. Clinicians provide options for command decision, and through credentialing, inform a part of readiness and capability. As a whole, military health capability is greater than just credentialing, and requires an appreciation and management of tempo, tasking, training and resources – key command responsibilities.

Outcomes focused. After analysis of extant ADF policy and contemporary civilian practices, we have formed the view that clinical credentialing of military clinicians distils into four components:

- Verification of qualification / knowledge / skill.
- Endorsement of an individualised Scope of Clinical Practice (SoCP).
- Assurance of suitability for employment within specific roles of the Combat Health Operating System (CHOS), including supervision requirements.
- Development of agreed individual learning plans to maintain readiness to deliver health effects as part of the Combat Health Operating System (CHOS).

The 1 HB system

Through understanding the why, 1 HB developed a new credentialing system that matches the purpose and required outcomes. This process culminates in the six-monthly Credentialing Board of Study.

By empowering Commanders with information that is capability focused, they are able to seek resources, manage tempo, and professionally develop their personnel. They are better able to ensure that the right individuals and teams are assigned to tasks to achieve the required health effect.

This system empowers individual clinicians through engagement and reflection on their professional development. It clearly communicates 1 HB's requirements of them as military clinicians – not just health professionals

Digital efficiency. The 1 HB system leverages the power of computers to gain significant efficiencies and eliminate the divergent truths that exist in the innumerate spreadsheets managed across health. Gone are the laborious 19th century mandraulic, paper-based processes. PMKEYS is the single source of truth. Further efficiencies are possible through adopting digital pathways to access and then batch upload data en masse.

Conclusion

The 1 HB system is centred on a shift in thinking regarding clinical governance from a staff-led, retrospective analysis to a command-led, future focused process. This re-imagining enables capability, supports endorsement of individual SoCP and facilitates development of individualised professional learning plans. The operational focus paired with increased transparency and quality of data has improved assurance both tactically and strategically.

Biography:

Major Zimmermann B Nurs, B Med, M Adv Prac Nurs (Acute), M Ed Stud, FRACGP

Major Zimmermann is currently the Senior Medical Officer of 1 HB. He was appointed to the RAANC in 2001 as a Nursing Officer. He subsequently completed his medical degree and transferred to the RAAMC as a Medical Officer. He has served with 8 CSSB, 1 HSB, 1 CSSB, 7 RAR, the Army School of Health, 1 CHB and 1 HB. He has performed numerous clinical, instructional, administrative and command roles.

Major Kain B Ed

Major Kain is currently the Operations Officer of the 1st Health Battalion. He graduated from the Royal Military College – Duntroon in 2012 to the Royal Australian

Army Medical Corps and has subsequently completed postings to 1 HB, RMC-D, HQ JOC, 1 RTB and 1 CHB, performing a mixture of command, instructional, operational planning and administrative roles.

Corresponding author name: Peter Zimmermann

Corresponding author email:
peter.zimmermann@defence.gov.au

The ReVive Ketamine Program – Addressing Gaps in Military and Veteran Psychiatry

Dr Alexander Lim¹

1 Zedthree Medical Group, Canberra, Australia

Over the last four decades, more than 1200 Australian Defence Force veterans and serving personnel have died by suicide. While psychiatric treatments are available, their efficacy in these populations, that is, those with Treatment Resistant (TR-) Depression, PTSD and Suicidality are extremely low. Psychological therapies are seen to have significant rates of partial response and drop out, and pharmacological treatments including SSRI's produce small effect sizes. More recently, research has suggested efficacy for using Ketamine treatment in psychiatric populations due to its enhancement of neural connectivity. Hence, the ReVive Ketamine Program offers an innovative approach to address this clinical gap in the treatment of TR- PTSD, Depression and Suicidality in Military and Veteran populations. Since 2019, over 130 current serving personnel and Veterans who have been screened as suitable have received intravenous Ketamine infusions in a medical-surgical hospital under the eye of nurses, anaesthetists, GP's, psychiatrists and psychologists. Baseline and ongoing data including inflammatory markers, neuroendocrine and psychometrics have been tracked over these infusions providing us with the largest longitudinal data set on Ketamine treatment for psychiatric diagnoses in Military and Veteran populations. The program aims to now engage with clinical research and international trials to identify possible blood-based biomarkers and neurological fingerprints (structure and function) in the brain associated with response to Ketamine treatment. Fully funded by the Department of Veteran Affairs and Bupa, and with pending DDVA HREC approval, results will be analysed to support the advancement of precision psychiatry. With now over 2000 infusions performed, the ReVive Ketamine Program provides hope for those current serving personnel and Veterans with TR- Depression, PTSD and Suicidality.

Biography:

Dr. Lim is a Consultant Psychiatrist in Psychotraumatology and the Chief Medical Officer of the Zed3 Medical Group, which includes the ReVive Ketamine program and multidisciplinary centre with specialists in Paediatrics, Nursing, Psychiatry and Psychology. His main responsibilities are to develop and maintain an evidence-based approach for the centre which has resulted in the construction of an integrative model of administrative and clinical care for current and former serving Military members and Emergency Services.

Dr. Lim's main area of research interest is in 'Next Step Treatments' where conventional psychotherapeutics have failed to produce functional gain. His current investigation is in the area of ketamine augmented by an integrated multidisciplinary approach. Zed3 Medical Group started the ReVive Ketamine Program which has been ongoing in clinical delivery since November 2019. Dr. Lim leads the ReVive Ketamine program which brings together a number of core disciplines for the safe delivery of the medication, and supported by a collaboration of domestic and international experts from well-known institutions including UQ, Yale, Baylor and ESTSS. On the basis of excellent patient care, attention to safety protocols, interdisciplinary work with Physicians, and exceptional patient outcomes, Dr Lim has been invited to brief several senior clinicians and ministers.

Corresponding author name: Alexander Lim

Corresponding author email:
jaimie@zedthree.com.au

Vector Surveillance and its application in the Australian Defence Force – does it have a Future?

Major Lisa Rigby¹, Major Chris Peatey²

¹ 2nd Health Battalion - Australian Army, ENOGGERA, Australia

² Australian Defence Force Malaria and Infectious Disease Institute, ENOGGERA, Australia

Maintaining the health of Defence personnel is at the core of every member in every department of Military Medicine. This is no different for the strange few amongst us, who have chosen a path of Vector-Borne Disease Research in which to dedicate our careers. So often have our fellow serving members raised their eyebrows in disbelief when we explain that we were employed within defence to operate as

an entomologist or a parasitologist. During moments of self-reflection, we often ask ourselves if scientific research in the ADF has its place now and into the future and how do we sell our specialty to the younger generation to ensure continuity in our profession in the ADF. During this presentation, we will share our experiences as research scientists within the ADF and discuss our true belief of its applicability into the future not only as a means of Force Health Protection, but also as capacity builders for our nearest allies.

ADFMIDI currently has projects to undertake vector-borne disease surveillance in PNG, Sabah in Malaysia and potentially a new project in Timor-Leste in the near future. ADFMIDI also partners with the US-DOD to trap mosquitoes on ADF training areas where US troops regularly deploy on exercises. Currently, capacity building with neighbouring Defence forces is occurring in PNG and the Solomon Islands with plans to increase this to Timor-Leste.

Biography:

Major Lisa Rigby enlisted in the Australian Army as a Scientific Officer in 2012. Major Rigby has over ten years' experience in mosquito research and has used this to strengthen the collaborative efforts between the Australian Defence Force Malaria and Infectious Disease Institute (ADFMIDI), other Australian Defence Force (ADF) units and Vector Control Officers in the Solomon Islands, Papua New Guinea and New Zealand. Major Rigby is the lead instructor on Vector-Borne Disease Surveillance and Control courses for international Force Health Protection units and government-employed Vector Control Officers across Australia and the Pacific. Major Rigby is currently posted to 2nd Health Battalion as Battalion Second in Command.

Major Chris Peatey enlisted in the Australian Army as a Scientific Officer in 2013. Major Peatey has over 17 years' experience in Malaria research and has recently been involved in mosquito research. In his 10 years working in Defence, Major Peatey has worked collaboratively with PNGDF, Malaysian Defence Force as well as the Timor Leste Defence Force, to build capacity and strengthen cooperation between these groups. Major Peatey is currently posted as the Head of Vector and Surveillance Control Department at ADFMIDI.

Corresponding author name: Lisa Rigby

Corresponding author email:
lisa.rigby@defence.gov.au

[illegible]

[illegible]

Notes



AUSTRALASIAN MILITARY MEDICINE ASSOCIATION



BECOME AN AMMA MEMBER TODAY

Further your knowledge
of Military Medicine
and Veterans' Health

Only \$164 per year

*Full Membership (Student discount available)

**Enter
discount code
JMVH for
\$40.00
discount**

**Annual Membership
spans 1 July 2022 -
30 June 2023**

**Jenna Tomlin
AMMA Secretariat
secretariat@amma.asn.au**

Other great Membership benefits:

- Interact with peers, community and the fellowship
- Stay connected with the Australian and New Zealand Army, Navy and Air Force
- Receive a copy of AMMA's publication, Journal of Military and Veterans' Health (JMVH) published four times annually. We welcome contributions from new authors and reviewers. Please visit www.jmvh.org
- As a member you are entitled to access reduced registration fees to attend AMMA education opportunities, including the Annual Conference and Workshops
- Take advantage of your membership to gain access to the Awards & Grants available. These are awarded annually and open to all members
- Become more involved in AMMA – all members have the opportunity to nominate for the AMMA Council
- All new members receive a membership certificate and welcome pack, and will be acknowledged and welcomed at AMMA's Annual General Meeting held in conjunction with the annual conference
- AMMA membership entitles you to voting rights at the Annual General Meeting
- Opportunity to purchase AMMA Merchandise

To join, please view amma.asn.au/membership and enter the discount code JMVH

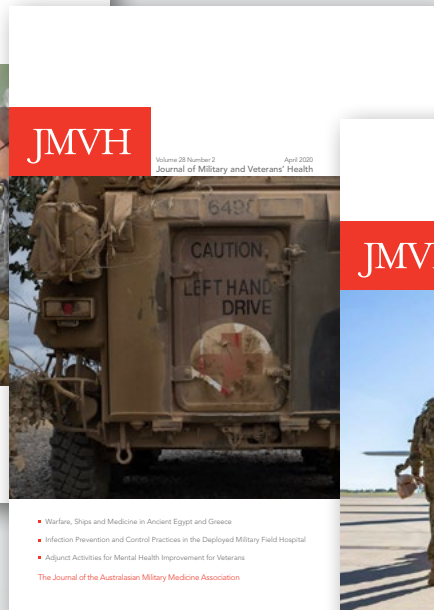


Call for photographs

The Journal of Military and Veteran's Health is a peer reviewed quarterly publication published by the Australasian Military Medicine Association.

The JMVH is always looking for quality cover images, if you have taken a photograph that you think would be suitable and interesting for the cover of an issue of the Journal, please email secretariat@amma.asn.au

JMVH



Do you have an article of interest to our readers?

The Journal of Military and Veteran's Health is a peer reviewed quarterly publication published by the Australasian Military Medicine Association.

Authors are invited to submit articles of relevance to the Editor for consideration for publication in the Journal of Military and Veterans' Health (JMVH).

Categories include:

Original Research/Original Articles

Short Communication

Review Articles

Reprinted Articles

Case Studies

Biographies

History

Book Reviews

Commentary

View from the Front

See the **JMVH** website for authors' instructions and submit your article online at www.jmvh.org

JMVH



DISCLAIMER

The views expressed in this journal are those of the authors, and do not reflect in any way official Defence Force policy, or the views of the Surgeon General, Australian Defence Force, or any Military authority

www.jmvh.org