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### A Bibliometric Analysis of Military Trauma Registry Publications

COL Michael Reade<sup>1,2</sup>

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2 2nd General Health Battalion, Enoggera, Australia

#### Abstract

The first entries in the US Department of Defense Trauma Registry (DoDTR) (originally the Joint Theater Trauma Registry, JTTR) were in December 2004. Currently containing >55,000 patient records, this registry offers opportunities for trauma systems and other research unique in the history of warfare. Initially limited to patients surviving to a Role 3 hospital, in 2008 patients admitted to Role 2 hospitals were added. More recently, data has been collected from prehospital and en route care. The similar UK JTTR commenced in 2003. The DoDTR and UK JTTR have been used for planning and quality improvement (quantifying adherence Clinical Practice Guidelines), but their enduring legacy will be trauma systems research just as relevant to civilian as military trauma care. No bibliometric summary of this research output has yet been published.

Currently, 133 publications are attributed by PubMed to the DoDTR or the JTTRs, with the first publication in 2006. These have been cited >6600 times, with an h index of 42 (i.e. 42 papers cited  $\geq 42$  times)(Google Scholar). Three journals have published >50% of these papers: the Journal of Trauma and Acute Care Surgery, the Journal of the Royal Army Medical Corps, and Military Medicine. In addition to many papers describing the nature and consequences of various types of wounds and injuries, publications with implications beyond military trauma include:

- the Military Application of Tranexamic Acid in Trauma Emergency Resuscitation (MATTERs) study demonstrating reduced mortality associated with tranexamic acid given soon after trauma;
- an analysis of the causes of preventable death before and after admission to hospital, demonstrating the priority that should be given to treating haemorrhage;
- a demonstration of the reduced mortality associated with a change to mandating forward aeromedical evacuation be provided such that casualties reach surgical care within 60 minutes of wounding. This paper also suggested a lower mortality associated with being taken to a Role 3 hospital compared to a surgical Role 2 hospital;

- the low (11.2%) incidence of primary blast lung injury in blast-injured patients surviving to hospital care;
- two analyses demonstrating reduced mortality in severe trauma when patients are transported by either a multidisciplinary medical/nursing/paramedic team, or highly-trained critical care flight paramedics, compared to military medics with more basic training;
- an analysis of vascular injury after blast and ballistic trauma that demonstrated a very low positive predictive value of absent pulses for the presence of vascular injury; and
- the very high incidence of very early venous thromboembolic disease in severe blast and ballistic trauma.

These figures do not include observational studies of other military casualty databases, such as that which identified an association between fresh whole blood (compared to component transfusion) and reduced mortality, and the first observational study to associate lower mortality with higher ratios of plasma to red cells transfused.

These databases are available for use by collaborating investigators and present a useful opportunity for ADF clinicians and planners to conduct research.

#### Biography

Colonel Reade is an anaesthetist and intensivist with a Doctorate in applied molecular biology from Oxford and a Masters in clinical trials from the University of Pittsburgh. In 2011 he was appointed the inaugural Defence Professor of Military Medicine and Surgery, and in 2015 the Director of Clinical Services of the 2nd General Health Battalion. He has deployed eight times, including in 2015 as the first Director of Clinical Services of an ADF R2E deployed on warlike operations. In 2016 he undertook a detailed audit of this hospital. His research focusses on traumatic coagulopathy and trauma systems design.

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### A Novel Peer-Lead Treatment Program for Military Veterans: The Stair Program

**Dr Jonathan Lane<sup>1</sup>**

*1 Army / The Hobart Clinic, Sandfly, Australia*

#### Abstract

The peer led treatment program being developed in conjunction with Mates4Mates (Hobart) consists of the establishment of a group therapy program for veterans that is being directly conducted by Dr Jonathan Lane and psychologist Kylie Harrison. The aim of this pilot project is to develop a peer led group treatment program that can be generally applied to other sites and organisations across Australia who are directly dealing with veterans. The STAIR (Skills Training in Affective and Interpersonal Regulation) is a fully manualized intervention aimed at improving emotional regulation and interpersonal functioning. Whilst initially designed for patients with PTSD, the program is trans-diagnostic in nature and aimed at patients with primary PTSD, mood, and anxiety disorders. It consists of 12 x 90minute sessions for male and female veterans. The purpose of the 12 week program is to improve functioning in day-to-day life, and to provide participants with a base level of emotional stability and capacity to either engage in, and continue further treatment if required, or to continue their lives with a range of skill sets that will improve their capacity to tolerate distress, build resilience, and maintain their interpersonal relationships.

The advantage of the peer led treatment model is that it is easy to access, provides first-line treatment to veterans in regional and rural areas, and is significantly more cost-effective to run due to the remote supervision by clinicians, rather than the normal model of direct treatment by the clinicians themselves. This allows a low-level intervention aimed at initial stabilisation of mental health problems for the individuals participating in the program, along with easy identification and referral to clinicians who are also involved in the program, but at our more appropriately triaged and targeted level. This therefore reduces the clinical burden on the professionals involved without reducing veterans' access to appropriate care and support. Additionally, the use of experienced and appropriately trained veterans provides a first-hand perspective on the process that the veteran's will be going through, as well as shared recognition of their past experiences and trauma.

At the moment there is an initial group of participants who are nearly finished the STAIR program, and

a small number of potential peer counsellors will be identified and given further training in counselling under the supervision of both Dr Lane and Kylie, in order to begin conducting the STAIR program for other veterans. These education and training steps are required to ensure that there is appropriate clinical oversight of the therapy done by these individuals, and thus ensure that there are appropriate standards for the treatment being delivered. When deemed 'clinically competent', the peer counsellors will begin conducting the program for other Veterans. The program will be assessed by means of psychometric mental health measures of the individuals participating in the program in order to define the actual clinical outcome benefits for the group participants.

#### Biography

*MAJ Lane enlisted as a soldier in the Army in 1989. He completed his Medical Degree at University of Tasmania as a sponsored Undergraduate student in 2004, and then served with 1 HSB in Holsworthy until returning to Hobart in 2010 to complete his Psychiatry training. In 2013 he also spent 6 months working with the US Mental Health Team at the NATO Role 3 MMU in KAF, Afghanistan, as the first ADF psychiatrist to be directly embedded with US MH providers. He is an active member of 3 HSB, is involved with Mates4Mates, lectures in Psychiatry at the University of Tasmania, and works as a private Psychiatrist at the Hobart Clinic where the bulk of his patients are serving and retired military personnel.*

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### ADF Forward CBRN Medical Capabilities - Preparing for Black Swans

**Associate Professor David Heslop<sup>1,2</sup>**

*1 University Of New South Wales, Randwick, Australia,*

*2 Special Operations Command, Canberra, Australia*

#### Abstract

Black Swans – for example Chemical, Biological, Radiological, Nuclear (CBRN) attacks, Weapon of Mass Destruction events, natural disasters or major epidemics – are high consequence crises that have historically been thought to occur rarely and are largely unpredictable. In contrast, Black Swans are

happening now, are occurring frequently, and are disproportionately potent agents of systemic change.

Taleb asserted that individual Black Swan events may not always be amenable to warning, prognosis or prediction prior to an event. However, the rise of complexity science and recent changes in the approach to modelling and simulation offer methods to significantly improve understanding of the nature and behaviour of adaptive socio-technical systems, the identification of system states capable of generating Black Swans in feasible contexts, and the factors that promote systems preparedness, resilience, responsiveness and which support sound operational decision making. Hybrid modelling approaches utilising large scale agent based systems, coupled with rapidly decreasing costs of high performance computing, are supporting initiatives to understand critical system performance, but more importantly investigating performance of novel and ad-hoc configurations of multiple responses systems operating together in crises – such as understanding joint civilian and military responses to various Black Swans.

Within the ADF CBRN medical response capability, particularly forward (hot zone) medical response, resides wholly within Special Operations Command, and is tightly integrated into components of the national response framework for incidents of national concern. The development, delivery and ongoing sustainment of a highly specialised CBRN medical capability has presented unique and difficult challenges, some of which will be touched on in this presentation.

Current research initiatives at the Faculty of Medicine at the University of New South Wales in support of understanding epidemic, CBRN and all hazards emergency response systems, appreciating and exploring the effectiveness of major disaster policy and health systems, the work of the NHMRC Center for Research Excellence for Integrated Systems for Epidemic Response, and investigating the efficiency of Whole of Government responses to health emergencies (including the involvement of military and other organisations) will also be outlined.

### Biography

*Dr David Heslop is an Associate Professor at the School of Public Health and Community Medicine, an active General Practitioner and Occupational and Environmental Medicine practitioner, and retains active advisory roles for specialist CBRN medical response capability in the Australian Defence Force, and was Senior Medical Officer for Special Operations Engineer Regiment from 2012-2015. He has had*

*direct responsibility and experience in planning and delivering health systems in remote and austere contexts. He is a chief investigator on the NHMRC CRE for Integrated Systems for Epidemic Response. His academic teaching and research touches on complexity science, agent based and deterministic modelling, emergent complex adaptive systems phenomena, test and evaluation of systems, policy research, epidemic modelling, exotic and emerging infections, disaster preparedness and response, organisational resilience in health care, development of robust socio-technical systems in health care, and the modelling, simulation and investigation of public health interventions and their support systems.*

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## An Integrative Approach to Measurement of Resilience to Psychological Stress

**MAJ Kane Pfingst**<sup>1</sup>, A/Prof Walker<sup>1</sup>, Dr Carnevali<sup>1</sup>, Prof Sgoifo<sup>1</sup>, A/Prof Nalivaiko<sup>1</sup>

<sup>1</sup> 1st Psychology Unit, University of Newcastle

### Abstract

In the context of military and emergency services resilience can be conceptualised as factors that lead to both the absence of illness and the ability to adapt to occupational stressors. Currently there is no gold standard method for assessing resilience to psychological stress. Resilience has traditionally been measured by questionnaire techniques, which are susceptible to self-report bias and are based on conflicting interpretations of the construct. A potential solution to this challenge is the development of integrated measures including standardised and validated physiological predictors of resilience. We conclude that future experimental protocols should measure biomarkers during baseline and in response to controlled stressors. The most promising candidates include startle response and cardiovascular recovery, cortisol, DHEA and cytokines in response to stress challenges. Importantly, they should be used in combination to enhance predictive power. Reality-based simulation present as a potential platform for evoking context relevant stress to measure and develop resilience.

### Biography

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## Army Combat Health Certification – How Does Our Performance Measure Up?

Dr Anthony Chambers, LTCOL Laura Sinclair<sup>1</sup>, LTCOL Nathan Fraser<sup>3</sup>, LTCOL Wayne Chow<sup>4</sup>

1 *1st Psychology Unit*

2 *2nd General Health Battalion*

3 *1st Close Health Battalion*

4 *17 Combat Service Support Brigade*

### Abstract

Certification is an accreditation process which recognises the ability of a provider to demonstrate, via independent external review, that the organisation has achieved a level of performance in relation to established standards (Jaafaripooyan, Agrizzi & Akbari-Haghighi, 2011). It is generally accepted that certification should not be conducted internally, nor be closely connected, in order to reduce the perception of bias and to increase objectivity and impartiality. To achieve this, 17 Combat Service Support Brigade (CSS Bde) utilises experienced health personnel, who demonstrate a high level of civilian expertise, whilst also possessing sound knowledge of the Army and operation in austere environments. In health, critical aspects to certification are evaluation of governance, standard setting, external evaluation, remediation to improve following review and promotion of continuous quality improvement. The following principles are observed during all technical certification processes of the 17 CSS Bde health capability through concepts of consumer focus, effective leadership, continuous improvement, evidence of outcomes and striving for best practice. Certification of health asset capability provides opportunity to test, evaluate and prove with evidence the current standard of deployable healthcare, indicating areas for quality improvement and enhancing interoperability between combat

arms, logistics and healthcare. In addition, it is expected that the standard of care delivered to enhance casualty survival is commensurate with those of civilian standards, regardless of the level of austerity of a battlespace environment. Observation and monitoring of the standard of care delivered is a key component of clinical governance within 17 CSS Bde. The achievement of a successful health certification process through the HOSPEX, CLOSEX and CERTEX platforms involves evaluation that provides evidence of collective technical certification that details the clinical effect delivered to reflect an accurate measure of the current standard of health care performance provided by 17 CSS Bde. Assessment and certification are essential processes in the cycle of operational readiness, which promotes the delivery of quality combat health care and maintenance of patient safety, by measuring what is delivered against national standards. Certification exercises must demonstrate the effective integration of command and clinical expertise by highlighting successes in patient transitions through each stage of care. Assessing the success of 17 CSS Bde's health capability in delivering quality care, is the central pillar of demonstrating 17 CSS Bde's commitment to provide ADF soldiers serving on deployments with the highest standard of health care possible.

### Biography

*LTCOL Laura Sinclair is the Commanding Officer of 1st Psychology Unit - the operational Army psychology unit within Forces Command. LTCOL Laura Sinclair is a psychologist, Monash University Masters graduate and has a broad range of Army experience ranging from aviation human factors through to command and control of health facilities. Her operational experience is extensive with twelve operational tours that have taken her to the Solomon Islands, Iraq, Afghanistan and Antarctica. She is the recipient of the Conspicuous Service Cross (CSC) for command and leadership of Joint Health Unit North Queensland.*

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### Army School of Health, Combat Health Training Team

**SGT Simon Dunn**<sup>1</sup>

*1 Australian Defence Force, Bandana Mil Po, Australia*

#### Abstract

With the introduction of medical mission specific Training into the ADF during the Afghanistan campaign, it was identified that a dedicated team should be responsible for the delivery of this training. In 2012 the Combat Health Training team (CHTT) was established at the Army School of Health. Their objective is to ensure that relevant, current best practice battlefield medicine is instilled into the mindset of deploying Army battle groups.

Today part of that mission specific training has filtered down to foundation training in the form of Care of the Battlefield Casualty and is embedded in the Army First Aid Course. Using lessons learnt and information from our coalition partners, continual development in training, equipment and protocols is taking place. These measures and others are delivering world class medical care to our deploying forces.

#### Biography

*Sergeant Simon Dunn enlisted in the Australian Regular Army in January 2002 as a Ground Based Air Defence Gunner. Later on completion of the Basic Medical Assistants Course in June 2005, corps transferred to Royal Australian Army Medical Corps.*

*Since corps transferring Sergeant Dunn has held a variety of trade appointments within Special Operations Command and Land Command.*

*Sergeant Dunn's postings include; 3rd Combat Service Support Battalion (June 2005 – 2008), the 1st Armored Regiment (2009 – 2010), the Special Air Service Regiment (2011 – 2014) and the Army School of Health (2015 – present).*

*Sergeant Dunn has seen operational service in South Pacific (2003) as part of Op Relex, East Timor (2006) as part of Operation Astute, Kuwait (2008) as part of Op Catalyst, and Afghanistan (2012) as part of Operation Slipper.*

*Sergeant Dunn's honors and awards include: Australian Active Service Medal with ICAT and Iraq Clasps; the Afghanistan Campaign Medal; the Iraq Campaign Medal; the Australian Service Medal with Timor Leste and Counter Terrorism / Special Recovery (CT/SR) Clasp; the Australian Operational Service Medal; the Australian Defence Force Medal;*

*the International Coalition Against Terrorism Medal; and an Army Soldiers Medallion (2007)*

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### Australian Antarctic Trial Aeromedical Evacuation

**WGCDR Kathleen Pyne**<sup>1</sup>

*1 Royal Australian Air Force, Bungendore, Australia*

#### Abstract

In Nov 2015 a RAAF Aeromedical Evacuation Team and Military Critical Care Aeromedical Evacuation Team had the privilege of conducting a Trial Aeromedical Evacuation from the Antarctic in a C-17. The C-17 Globemaster flew from Hobart to Wilkins Airstrip, as part of the RAAF Proof of Concept to support the Australian Antarctic Division (AAD) within the Australian Antarctic Territory. The flight was only the second time a RAAF C-17 had landed on the Antarctic ice. The Trial AME was coordinated and attended by the Chief of Aeromedical Evacuation, Wing Commander Kathleen Pyne, in close consultation with the AAD Deputy Chief Medical Officer Dr Roland Watzl, who also attended.

The team consisted of 3 Aeromedical Evacuation Squadron (3AMES) members: FLTLT Jason Lynam OIC (now SQNLDR Health Centre Manager, Edinburgh), FLTLT Lisa Martin 2IC/MO, CPL Ashlie Crockett MEDASST, WGCDR Howard Roby MCAT MO and SQNLDR Anna-Lisa Hernan MCAT NURS, as well as FLTLT Tassie Smith HOCU AME Training Instructor, Dr Marcus Skinner from Hobart Hospital and GPCAPT Donald Sutherland, Director Air Mobility Division and WGCDR Pyne and Dr Watzl, as above.

The mission was successful in identifying limitations faced when working in freezing conditions and in highlighting concerns such as the Stretcher Bridge Intensive Care Ensemble (SBICE) not fitting in the Haggglunds vehicle which is used by AAD. The risk of operating on slippery blue ice was unfortunately made evident when one of the RAAF members on the flight became a real casualty, having fallen on the ice and sustaining a significant orthopaedic injury. It was fortuitous that the AME team were on board and the patient was well looked after. He was Aeromedically Evacuated to RAAF Richmond the following day.



Planning AME support to the AAD is much like planning for any other AME mission, with specific attention being paid to PPE and equipment limitations, as well as to safety on the ice. The conduct of the Trial AME allowed a consolidated approach to address concerns and risks. The Trial was most valuable, as the ADF are now able to confirm that we are capable of conducting Aeromedical Evacuation support to the Australian Antarctic Division using the C-17. It was a privilege to work with AAD members and it is an honour to be able to offer them our assistance in supporting them, and the excellent work they do in preserving the Antarctic environment and wild-life.

### Biography

*Wing Commander Kathleen Pyne has served in the RAAF for almost 27 years and is currently the Chief of Aeromedical Evacuation (AME) at Head Quarters Joint Operations Command. She was the inaugural Commanding Officer of 3 Aeromedical Evacuation Squadron and was Commanding Officer of 3 Expeditionary Health Squadron.*

*WGCDR Pyne has deployed to Rwanda, East Timor, Bougainville and the Middle East. In East Timor as the Officer in Charge of the AME Staging Facility, she flew in a multitude of Rotary and Fixed Wing aircraft conducting Tactical and Strategic Aeromedical Evacuations. She has been a Health Ministerial Liaison Officer, Health Operations Officer, Executive Officer, and Chief Staff Officer and has completed Command and Staff Course.*

*WGCDR Pyne has a Masters in Trauma Nursing, was Aide de Camp to the Governor General of Australia and is married with an adorable 6 year old son.*

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*Wing Commander Kathleen Pyne*

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## Beyond the Part Task Trainer- A Renaissance in ADF Health Simulation.

**Kylie Douglas**<sup>1</sup>

*1 Joint Health Command, Canberra, Australia*

### Abstract

As individual Services, the Navy, Army and Air Force have utilised simulation in all its various guises, to various levels of capability for the last twenty years or so. As a result they have built solid foundations in utilising technology, specifically the use of high fidelity simulation mannequins for teaching everything from cannulation skills to running a sick bay.

So, 'Where to from here?' In a climate of high end user expectations, shrinking budgets, significant staff turnover and consequent loss of corporate knowledge; How can we do more to enable capability through simulation and safeguard our limited resources?

This presentation will provide a snapshot of current health simulation assets and what they are utilised for across the Services, the role JHC plays in managing and co-ordinating the provision of simulation systems, how this is benefitting individual Service and Joint enabling effects and future initiatives to ensure sustainment of the asset (s). Naturally, we will also discuss the challenges and limitations all 'good ideas' practically present.

Borne out of a recommendation from the Force Protection Review some years ago, have grown the beginnings of a collective ADF health simulation framework, ever evolving into a more mindful way of doing business and a vehicle to support our entire blended health workforce to deliver capability.

### Biography

*Kylie Douglas has specialised in both vocational and professional learning and development in Defence health for over a decade. Her accomplishments include Joint Medics training, AME refresher training, Military Critical Care AME (MCAT), CBRN for Health Officers, Military Anaesthetics, An Introduction to Defence Health Care and the implementation of An Introduction to Occupational Medicine. She provides input into many Defence health publications and has previously taught business skills, mentored students and held academic positions at the University of Canberra. Kylie commissioned as a RAAF Nursing Officer in 1997 after working in acute and specialised areas of the Victorian public health system. Her Air Force career has included overseas medical support to Gallipoli, Service in East Timor with the AME team and working with the USAF on their Critical Care Air Transport course. Her continuing work includes policy and training implementation strategies for frozen blood products to the ADF. Kylie is currently working with the Services to optimise the Simulation systems currently within Defence health and generally works with multiple agencies to improve Defence health training co-ordination and relationships.*

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### Can Culture Have an Impact on Clinical Performance? How can we Evolve for Ourselves and our Patients?

**Dr Isaac Seidl**<sup>1,2</sup>

1 Joint Health Command, Canberra BC, Australia,

2 James Cook University, Townsville, Australia

#### Abstract

Westrum (2004) proposed a typology of organisational culture in healthcare organisations, illustrating through case study evidence that the 'generative' organisation, characterised by performance orientation, high cooperation, shared risks and novelty (innovation), would make best use of assets and enhance patient safety. This seminal paper, which has been cited 221 times, seems so simple, yet the converse, 'pathological' organisation, characterised by power orientation, and in which there is low cooperation, messengers are shot, responsibilities shirked and failure is scapegoated, still seems to be part of the healthcare landscape.

This presentation will explore the reasons why organisations have difficulty transforming from pathological to generative, including analysis of teamwork as proposed by Lencioni (2002), and the positive impact of Sinek's (2009) 'Start with why' movement. The concept of values based leadership, will be proposed as a tipping point (Gladwell, 2000) of Joint Health Command's evolution.

The literature even includes a randomised trial of rudeness and the impact on medical team performance (Riskin et al, 2015) in which significant performance shortfalls were observed in the intervention group.

The presentation will conclude that through positive leadership interventions, some of which are simple, a healthcare service can move to, and consolidate itself, as Westrum's generative organisation.

#### Biography

*Dr Isaac Seidl is a specialist medical administrator and general practitioner. He completed his medical degree at UWA, then undertook a variety of Army appointments across all military environments, before being appointed to Qld Health as Deputy Executive Director Medical Services, Townsville Health Service. He returned to the Australian Regular Army in 2012 and holds the rank of Colonel. Dr Seidl's academic interests include crisis leadership, clinical governance and ethics. He is Adjunct Associate Professor in Public Health at James Cook University. Dr Seidl lives in Canberra, Australia with his wife and two children.*

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### Changes to Health Support Allowance and the New Health Declaration

**WGCDR Kath Stein**<sup>1</sup>

1 JHC, Campbell Park

#### Abstract

Health Support Allowance is available to eligible ADF Reserve personnel to help offset the health costs associated with maintaining their health readiness. With the revision of the Pay and Conditions Manual determination, all Reserve members applying for this allowance after its introduction (after 01 July 2016, date to be confirmed after the election on 02 July) will need to complete a Reserve Health Declaration. This potentially annual process will involve any change in their health status since their last application to be declared. In this case, health information from their treating GP will be required.

As Reserve members do not receive their routine health care from Defence, Defence has little visibility of their current health status, often the only health information is gathered on the five yearly medical. This means that they may not be employed safely when rendering reserve service, and may be at risk of an adverse health outcome. Provision of current updates from the Reserve members GP, when relevant, will enable the Defence Health Service to have better oversight of individual member's health status and from the health perspective a more reliable capability to be employed by the Services.

This presentation will provide an overview of the changes within the Health Service Allowance Determination and the new health process for both internal Garrison and civilian GP communities.

### Biography

WGCDR Kath Stein has had a range of administrative and operational postings in her career as a RAAF Nursing Officer. Currently serving as the SO1 Health Policy Coordination within Directorate of Military Medicine the delivery of the DHM is her primary focus.

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## Clinical Leadership Development Model - A Proposal

LTCOL Jenni Ward, COL Julie Finucane

1 Health Reserves - Army

2 QEII Jubilee Hospital

3 DHOC RAANC

4 Princess Alexandra Hospital

### Abstract

The purpose of the proposed Clinical Leadership Development Model (CLDM) is to drive clinical nursing practice to ensure a skilled and experienced nursing workforce is capable of supporting the Army and the Australian Defence Force (ADF) during operational environments. This will be achieved through a consistent structure and direction for the planning, design, implementation and evaluation of professional practice of NOs (Nursing Officers). The CLDM is designed to support the delivery of evidence based practice, effective risk management, optimal clinical capability and provision of high quality health and patient care to meet Army's priorities of health care. The CLDM provides a clinical employment pathway to guide NOs in clinical leadership and management experience, identifies areas of strength and weakness and provides guidelines for further development. It is to support NOs to be transformational clinical leaders, with the competence and confidence to practice in an ever changing and challenging civilian and ADF environment. The success of this model is dependent on the NOs being embedded within civilian hospitals to foster positive, effective therapeutic and professional relationships through engagement of

staff. This will enable NOs to practice to their full potential, gain increased levels of personal and career performance and satisfaction, whilst maintaining best patient outcomes.

### Biography

Lieutenant Colonel Jenni Ward commenced her military career in 1987 as a reserve Nursing Officer in the Royal Australian Army Nursing Corps (RAANC). She has held a number of Corps and Non Corps postings and is currently Deputy Head RAANC (part time) and SO1 Nur HQ FORCOMD. She has a Masters in Health Science (Nursing), and is a Fellow of the Australian College of Nursing and a Fellow of the College of Emergency Nursing Australasia. Lieutenant Colonel Ward has gained civilian experience in rural and remote settings, the Royal Flying Doctor Service and emergency departments in metropolitan hospitals. She is currently the Trauma Education Coordinator at the Princess Alexandra Hospital, Brisbane. Lieutenant Colonel Ward instructs on the College of Emergency Nursing Australasia Trauma Nursing Program (CENA TNP), Major Incident Medical Management Support (MIMMS) courses and is a Nurse Coordinator for Emergency Management of Severe Trauma (EMST) and Definitive Surgical Trauma Care (DSTC) courses.

Colonel Julie Finucane joined the Army in 1980 as a general reserve officer. Her civilian background in emergency nursing supported many placements of ADF personnel, during the 1990s and early 2000s, into a tertiary referral emergency department where she was the Nurse Unit Manager. She has a Masters in Emergency Nursing, and is a Fellow of the Australian College of Nursing and a Fellow of the College of Emergency Nursing Australasia. Her defence role is a Colonel in Directorate Health Reserves – Army, a small newly formed unit focussing on recruitment of specialised Health Reserves, and support for them. Her civilian role is Nursing Director Medical QEII Jubilee Hospital, a 180 bed hospital 22kms south of Brisbane, with specialities of general surgery, urology, orthopaedic, gynaecology, general medicine/ cardiology, palliative care, rehabilitation/acute stroke, with a 5 bed intensive care unit, an emergency department which sees 55,000 presentations annually, and an endoscopy unit. She received an Order of Australia Medal in 2000 for services to nursing, particularly in the area of accident and emergency care and community. She is the President of the Centaur Memorial Fund for Nurses, and actively involved in the further development and promotion of the College of Emergency Nursing Australasia Trauma Nursing Program.

### Clinical Standards and Audit Project

**Janine Fletcher**, Dr Darrell Duncan<sup>1</sup>

<sup>1</sup> Garrison Health Operations, Campbell Park, Australia

#### Abstract

1. The Clinical Standards and Audit Project (CSAP) is a response to the release of the RACGP Standards for Garrison Health Facilities. CSAP is envisaged as the first phase of a sequence of works that could culminate in GHO facilities seeking external accreditation. No decision has been taken to date as to whether external accreditation will be sought.
2. The first phase of the project delivered a framework document with a number of annexes supporting the framework including:
  - a. Audit framework with annexes
  - b. Glossary
  - c. Proposed schedule of audits
  - d. Audit tools based on Garrison Standards
  - e. Facility Self Assessment tool
  - f. Evidence matrix
  - g. Generic facility handbook
  - h. Reporting template
3. A nationwide road show across all Joint Health Units occurred from March to May 16. The workshops aimed to engage frontline staff to ensure the utility of the tools that had been developed in the first phase of the project. During the road show the following activities occurred:
  - a. Evidence matrix fleshed out
  - b. Clarification of what information needs to go into the handbook (or needs a national instruction)
  - c. Semi-structured interview questions compiled
  - d. Feedback on framework/glossary/ report template
4. The GHO business process maps although not part of the CSAP framework will be reviewed separately through the project executive in conjunction with Garrison Ops and Operational Clinical Governance Staff to develop audit tools consistent with those in the framework.
5. The Pilot Phase of the project is being conducted in the second half of 2016.

#### Biography

*Dr Duncan is the JHC Director of Strategic Clinical Governance and MECARS. Dr Duncan has extensive experience in the Defence Health environment and brings his skill and knowledge to this project.*

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### Combat Training Injuries in Australian Army Personnel

**Dr Robin Orr**<sup>1</sup>, Dr Rodney Pope<sup>1</sup>

<sup>1</sup> Tacitcal Research Unit, Bond University, Gold Coast, Australia

#### Abstract

**Introduction:** Military soldiers must be trained to be able to operate successfully in complex warfighting environments. Previous research suggests that, for Australian Army Reserve (ARES) soldiers in particular, combat-related training is a leading source of injuries. The aim of this research was to further investigate combat-related training related injuries in Australian Army personnel in order to inform future risk minimisation strategies.

**Methods:** Data captured from the Workplace Health, Safety, Compensation and Reporting (WHSCAR) database for the period 01 July 2012 and 30 June 2014 formed the basis of this study. Data inclusion criteria were: a) data were from participants serving in the Australian Army over the collection period; b) participants suffered an injury or fatality; and c) the identified cause of injury met specific inclusion criteria related to combat training (e.g. weapon training, battle PT, etc). Reported combat training-related injury incidence rates were calculated for both ARES and Australian Regular Army (ARA) populations and compared. The Australian Defence Human Research Ethics Committee (Protocol LERP 14-024) and the Bond University Human Research Ethics Committee (Protocol RO1907) approved the study.

**Results:** Of 15,065 WHSCAR reported incidents, 4004 (ARA n=3,292; ARES n= 712) met the data inclusion criteria. The overall incidence rate for reported injuries equated to 6.3 combat training-related injuries/100 person-years' service, with the ARA rate being 5.6 injuries/100 person-years' service and the ARES rate being 15.1 injuries/100 person-years' service. The leading combat training-related activities to cause injuries were 'Combat Training' (44.06%; ARA=42.62%; ARES=50.70%), 'Physical Training' (17.68%; ARA=19.96%; ARES=13.34%) and 'Marching' (15.61%; ARA=16.25%; ARES=12.64%). 'Load carriage' and training for or completing the

'Physical Employment Standards Army' were found to be commonly reported activities being completed at the time of injury in the free-text descriptors. For both populations, and overall, the 'knee' was the leading site of combat training-related injuries (14.43%; ARA=13.79%; ARES=17.42%) followed by the 'ankle' (11.14%; ARA=11.15%; ARES=11.10%) and 'lower back' (10.09%; ARA=10.69%; ARES=7.30%). The leading nature of injury was 'soft tissue injuries due to trauma or unknown mechanisms' (46.70%; ARA=45.80%; ARES=50.84%), followed by 'trauma to muscles' (6.67%; ARA=6.83%; ARES=5.89%). While heat stress/heat stroke was the third most common nature of injury overall (4.90%) and in ARA personnel (ARA= 5.10%), it was only the fifth most common for ARES (3.93%) where 'laceration or open wounds' were third most common (4.21%). The top three mechanism of injury whilst the same, varied in presentation. While 'muscular stress while lifting, carrying, or putting down objects' (26.50%; ARA=27.88%; ARES=20.08%) and 'muscular stress with no object being handled' (19.67%; ARA=19.78%; ARES=15.73%) were the leading mechanisms overall and for ARA, 'falls on the same level' was the leading mechanism of injury for ARES (23.46%) whilst being third for ARA (16.40%) and overall (17.66%).

Conclusion: While the leading activities, sites and nature were generally the same, ARES personnel suffered nearly three times more injuries per 100 full-time equivalent years of active service, during combat orientated training. ARES personnel were also more prone to falling as a mechanism of injury as opposed to muscular stressing mechanisms.

### Biography

*Rob served for over 23 years in the Australian Regular Army as an infantry soldier, physical training instructor, physiotherapist and human performance officer. Still serving in the Army Reserve, Rob took up an appointment at Bond University where he currently co-leads the Tactical Research Unit. With a PhD in occupational load carriage for military personnel, Rob has over 30 peer reviewed publications specialising in tactical populations alone and has been invited to present his research both nationally and internationally.*

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## Dental Casualty Rates in the Middle East Area of Operations, 2016

MAJ Geoff Harvey

### Abstract

In 2015, Army deployed a dental team on Operation Highroad, to work in the NATO Role 2 hospital in Kabul. This represented the first time an ADF dental team had deployed to Afghanistan, and was the first Australian dental team to deploy on operations in almost a decade. MAJ Geoff Harvey was the dental officer on this first rotation, and he will be providing a brief overview of the dental team's deployment, with particular reference to the clinical work (including casualty rates, dependencies, and the type of treatment provided), as well as comparing and contrasting this trip with previous dental deployments.

### Biography

*After joining Army as an undergraduate, MAJ Harvey worked as a dental officer at various postings in Sydney, Townsville, and Brisbane. He was the first Australian dental officer to deploy to Afghanistan, and is the Deputy Head of the Royal Australian Army Dental Corps. He was sponsored by Army to complete his postgraduate training in 2011, and now works as a specialist periodontist. After almost fifteen years in the ARA, MAJ Harvey has recently transitioned to the Army Reserve, and works full-time in private practice.*

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## Detection and Mitigation of Hearing Loss in the Australian Defence Forces

Dr David Sly<sup>1,2</sup>, Migien Swindon<sup>3</sup>, Anna Terrell<sup>3</sup>, A/Prof Regina Cramer<sup>4</sup>, A/Prof Simon Ng<sup>4</sup>, Bojana Sarkic, A/Prof Gary Rance<sup>3</sup>

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<sup>4</sup> The Defence Science Institute, Australia

### Abstract

Hearing loss is an enormous problem in Australian Defence Force Personnel and detecting this hearing loss is vital for protecting soldier's safety. 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.

The aim of this study therefore was to examine a population known to have a history of noise exposure (Defence Force Personnel) and determine if those with normal audiograms had deficits in more sensitive tests of hearing. We recruited 40 soldiers and civilians from Victoria and Simpson barracks and tested their hearing using an audiogram and administered a questionnaire to measure self-reported history of noise exposure. 26 soldiers and civilians with normal audiograms underwent further study in our clinics with an extensive range of hearing tests that are well established in clinical use, but not normally used for the detection of NIHL. In particular, we focused on sensitive tests of the nerves in the inner ear and tests of real-world speech among background noise.

Our initial results suggest a deficit in inner ear hair cell function in soldiers with otherwise normal hearing as measured by the audiogram and that this is related to increased noise exposure. Other recent research also suggests the presence of hidden hearing loss in individuals with a history of noise exposure that is often not detected by a standard audiogram hearing test. Our results suggest a slight deficit in inner hair cell function, while other reports have found no deficit in inner hair cell function, but rather found a deficit in the function of the nerves of the inner ear.

### Biography

*Dr Sly is a Senior Lecturer in Clinical Technologies, Swinburne University of Technology and holds honorary appointments 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.*

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## Developing Army Psychology Capability – Training through to Combat

**LTCOL Laura Sinclair<sup>1</sup>, LTCOL Alison Kaine<sup>2</sup>**

*1 1st Psychology Unit*

*2 Army School of Health*

### Abstract

The new generation of Army psychologist needs to be adaptable and agile. The development of this capability starts with the Army health training framework provided through the Army School of Health. The training framework entails the Psychology Officers Basic and Advanced courses which meticulously prepare Army psychologists at key career promotional milestones. These training opportunities provide extended practice training and familiarisation of relevant clinical, organisational, occupational and human factors psychology practices at both the junior and senior psychologist level; and contextualises extant skills within an Army and tri-service context. A critical juncture in an Army psychologist's career is the application of this skill development within an operational context. It is at the 1st Psychology Unit that the combat psychology experience is fully realised. Through the Foundation Warfighting (FWF) and Army Training Levels (ATLs) framework, Army psychologists are further developed to deploy to high risk locations and engage in psychological support to frontline combat troops. The 1st Psychology Unit consists of personnel that are at high readiness and are rapidly deployable, able to support all contingencies as directed by the Australian Defence Force (ADF). The role of 1st Psychology Unit is to provide operational psychology support to Army in order to achieve its mission by contributing to capability, combat readiness, operational effectiveness and force preservation. The synergies between Army School of Health and 1st Psychology Unit through 'Raise, Train, Sustain' modelling formulates a platform of first class collective training that logically transitions to directed capability and task outputs. Opportunities for short learning loop processing and integration of formal learning structures with applied development environments creates a profound culture that continually adapts to ensure relevance. The applied combat psychology development through 1st Psychology Unit that builds on the Training Management Packages (TMPs) delivered by the Army School of Health creates Army psychology capability that is ready to respond, ready to make an impact. The challenge is to ensure that this trajectory of training and development continues at the cutting edge of relevance, responsiveness and agility.

### Biography

LTCOL Laura Sinclair is the Commanding Officer of 1st Psychology Unit - the operational Army psychology unit within Forces Command. LTCOL Laura Sinclair is a psychologist, Monash University Masters graduate and has a broad range of Army experience ranging from aviation human factors through to command and control of health facilities. Her operational experience is extensive with operational tours to the Solomon Islands, Iraq, Afghanistan and Antarctica. She is the recipient of the Conspicuous Service Cross (CSC) for command and leadership of Joint Health Unit North Queensland.

LTCOL Alison Kaine is the Commanding Officer of the Army School of Health which provides tri-service initial employment, extended practice and military contextualized training to a range of Defence Health Professionals. LTCOL Alison Kaine is a psychologist, University of New South Wales Masters graduate and has recently submitted her Doctor of Philosophy Thesis for examination through the University of Adelaide. LTCOL Kaine has experience within a range of domains including forensic, alcohol and other drugs and in the development of the Forces Command Resilience Framework and guidelines for Resilience Training for Army personnel. She has extensive operational experience with operational tours to various overseas settings including Timor Leste, Afghanistan, Pakistan, Cyprus and Antarctica.

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## Diploma Military Medicine Update

**WGCDR Adeline Chong<sup>1</sup>**

<sup>1</sup> Royal Australian Air Force, Melbourne, Australia

### Abstract

The Diploma of Military Medicine is currently being developed with the Royal Australasian College of General Practitioners. It is a post vocational qualification which aims to highlight the specialist knowledge required of a Medical Officer working in the military environment. This presentation aims to provide an update on the progress of this qualification's development; as well as the preparation requirements for candidates who intend to embark on this body of study.

### Biography

WGCDR Chong is an experienced staff officer in the health environment, in both the PAF and RAAFSR. She was assigned this project in 2015, and has progressed it along the RACGP approval process. She has postgraduate qualifications in Dentistry, Health Management and training.

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## Drinking Motives as a Mediator of Hazardous and Harmful Drinking in Young Royal Australian Navy trainees.

B.J Gabbe<sup>1</sup>, J.V Rosenfeld<sup>1,2</sup>, **LEUT Jason Watterson<sup>1,2,3</sup>**

<sup>1</sup> Monash University, Victoria, Australia

<sup>2</sup> Australian Army

<sup>3</sup> National Trauma Research Institute(NTRI) Alfred Health

### Abstract

Background: Risk-taking behaviours are associated with alcohol and substance abuse issues amongst trainees in the Australian Defence Forces (ADF). Reducing alcohol-related issues in trainees is a key aim of the ADF. Most interventions to address alcohol and substance abuse issues have not been developed or tried in the defence context, and there are substantial differences between the civilian and defence force populations. The Prevent Alcohol and Risk-related Trauma in Youth (P.A.R.T.Y.) Program, developed in North America, is a widely used program for addressing risk-taking behaviour and alcohol consumption in young people. Following a brief pilot program in 2012, a large randomised controlled trial of the efficacy of the P.A.R.T.Y. program is being conducted in the ADF. The aim of this presentation is to describe the factors which motivate trainees drinking behavior and the prevalence of alcohol use disorders in naval trainees based on the baseline screening of the participants in the trial. Understanding the motivational factors for consuming alcohol amongst young naval trainees may also assist the ADF to select screening tools, secondary prevention and other intervention activities in order to effectively identify and educate risky drinkers.

Methods: All participants in the P.A.R.T.Y. trial were screened at baseline using the Alcohol Use

Disorders Identification Test (AUDIT), and the Modified Drinking Motives Questionnaire - Revised (MDMQ-R). These are validated tools for screening for excessive drinking, and drinking motives, respectively. Responses to the AUDIT are used to calculate a total score ranging from 0 to 40 where scores of  $\geq 8$  are recommended as indicators of hazardous and harmful alcohol use. Three further domains are also assessed within the tool; questions 1-3 explore hazardous alcohol use, questions 4-6 explores dependence symptoms, and questions 7-10 explore harmful alcohol use. Responses to the MDMQ-R are divided into five factors to describe a person's motivation for drinking; social, coping anxiety, coping depression, enhancement and conformity.

**Results:** Of the 954 participants screened to date, 40% reported total AUDIT scores  $\geq 8$  indicating hazardous and harmful levels of alcohol use. (89%) of the participants reported consuming 5 or more drinks containing alcohol in a drinking session, exceeding the National Health and Medical Research Council guidelines for safe alcohol consumption. Social factors were the most common drinking motivation within this cohort compared to the other four factors on the MDMQ-R. The following are the mean scores for the cohort described. Social 13.2, coping anxiety 6.0, coping depression 9.0, enhancement 9.3 and conformity 5.6.

**Conclusion:** In this cohort of Royal Australian Navy trainees, the prevalence of hazardous drinking behaviours was high. Interventions aimed at reducing risk-taking behaviour and hazardous drinking, such as the P.A.R.T.Y. program, which is currently being evaluated in the ADF, are needed. Exploring the social motivations and methods to mitigate their impact on drinking behavior is also warranted.

### Biography

*Jason is currently pursuing his PhD exploring alcohol related harms in young naval trainees under the supervision of Professor Belinda Gabbe, Professor Jeffrey Rosenfeld and Professor Paul Dietze. His thesis aims to explore alcohol related harm minimisation and is linked to an RCT funded by Defence Health Foundation titled 'Measuring the effectiveness of the in-hospital and new on-base P.A.R.T.Y. programs (Prevent Alcohol and Risk-related Trauma in Youth) in reducing alcohol related harms in young naval trainees.*

*Jason continues to work in the Department of Intensive Care and Hyperbaric at the Alfred as a clinical Educator part time during his candidature.*

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## Drinking to Cope with Operational Deployment: A Longitudinal, Prospective Investigation into Alcohol Use and Motivations to Consume Alcohol

**LTCOL Alison Kaine<sup>1</sup>**

*1 Army, Bonegilla, Australia, 2University of Adelaide, Adelaide, Australia*

### Abstract

Previous research has suggested that the deployment experience can influence alcohol consumption and that characteristic differences can mediate alcohol related behaviours. This study investigated the drivers, predictors and correlates of the course of alcohol use in relation to military operational service. Differences in alcohol consumption behaviours from pre- to post-deployment were assessed for 676 Australian Defence Force (ADF) personnel deployed on operational service within the Middle East Area of Operations (MEAO) using a prospective longitudinal research design. Personality and coping styles, mental health risks trauma exposure and motivations to consume alcohol were also measured. One of the most prominent findings from this study is the influence that motivations to consume alcohol have on patterns of alcohol use. Interactions between motivations to consume alcohol, inherent personality characteristics and mental health measures were also found. This suggests that as well as being a consequence of inherent characteristics and psychopathology, problematic use of alcohol is also a result of conscious choice. This research highlights the complex matrix of factors that contribute to problematic alcohol use as a consequence of the deployment experience. It highlights the importance of evaluating motivations to consume alcohol as a key contributor in the development and subsequent assessment and identification of post-deployment alcohol misuse. Early identification is vital and interventions that address alcohol consumption motivations in addition to personality and coping factors could play a promising role in the prevention as well as treatment of post-deployment problematic alcohol use.



### Biography

*LTCOL Alison Kaine is the Commanding Officer of the Army School of Health which provides tri-service initial employment, extended practice and military contextualized training to a range of Defence Health Professionals. LTCOL Alison Kaine is a psychologist, University of New South Wales Masters graduate and has recently submitted her Doctor of Philosophy Thesis for examination through the University of Adelaide. LTCOL Kaine has experience within a range of domains including forensic, alcohol and other drugs and in the development of the Forces Command Resilience Framework and guidelines for Resilience Training for Army personnel. She has extensive operational experience with thirteen operational tours to various operational settings including Timor Leste, Afghanistan, Pakistan, Cyprus and Antarctica.*

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### Effective Leadership on Operations: Perspectives from NZDF Commanding Officers

**LT Minette Steyn**

*1 New Zealand Defence Force, Thorndon, Wellington, New Zealand*

#### Abstract

This presentation provides an overview of research findings in this area including the main causes of fatigue as well as various management strategies that can be employed during operations. Additionally this presentation showcases a commander's guide to fatigue on operations that has been developed for New Zealand commanders.

The New Zealand Defence Force (NZDF) has a strong history of being an important ally to many nations on operations and considered a valued partner in the global efforts on peace and security. Over the last 10 years, NZDF have served in numerous locations including Bosnia-Herzegovina, Tonga, Timor Leste, Iraq and Afghanistan. Whilst this is currently considered a peace time for the NZDF, we still 14 active operations in 10 different countries including Afghanistan, South Korea and United Arab Emirates.

Given our on-going operational output and the scope of our operations it is becoming increasingly likely that more personnel will suffer from some form of fatigue during or after a deployment. Additionally

there may also be an increase in the number of personnel who may experience on-going symptoms of fatigue which could lead to further wellbeing complications. Consequently understanding fatigue and the implications thereof during operations has become a key element in our overall operational effectiveness.

### Biography

*LT Minette Steyn is currently employed as a psychologist undergoing professional registration in the generalist psychologist scope. Following completion of her tertiary studies in psychology at the University of Auckland and Massey University, LT Steyn joined the Regular Force in the*

*New Zealand Army in June of 2015. Since joining the NZ Army, LT Steyn has been based in Defence House, undergoing her professional registration as a generalist psychologist, as well as completing a number of duties such as selection and assessment, training and support to operations.*

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### Exploring the Impact of Deployment to a Combat Zone: The Impact of Combat Study

**Dr Ellie Lawrence-wood<sup>1</sup>, COL Nicole Sadler<sup>2</sup>,  
Mrs Helen Benassi<sup>2</sup>**

*1 University of Adelaide, Adelaide, Australia*

*2 Department of Defence, Canberra, Australia*

#### Abstract

This presentation will provide the historical background and context to the development of the Impact of Combat Study. The Impact of Combat Study has followed up all individuals who participated in the Middle East Area of Operations (MEAO) Prospective Health Study (including current and ex-serving ADF members), with the aim of examining the longitudinal trajectory and risk and protective factors for mental, physical, and social health and wellbeing. Up to four years have passed since this cohort of ADF members deployed to the MEAO. This study will provide important insight into how this cohort is doing now, including the long-term impact of deployment on psychological, biological and neurocognitive functioning. The current presentation will provide details of the study progress to date and the complexities associated with following up ADF members over time. It will conclude with a discussion of the research questions that will be addressed by this study and the potential benefits to our deploying service personnel.

### Biography

*Dr Ellie Lawrence-Wood is a Senior Research Fellow at The University of Adelaide. She has conducted numerous large-scale projects examining the health and wellbeing of ADF personnel. She is Chief Investigator and manager of: The Impact of Combat Study, examining the longitudinal physiological and psychological impacts of deployment to a combat zone; and The Mothers in the MEAO project, investigating the health and psychosocial impacts of deployment on Australian deploying mothers.*

*Colonel Nicole Sadler, CSC is the Director Strategic and Operational Mental Health (Joint Health Command) and Head of Corps (Australian Army Psychology Corps). She joined the Regular Army in 1994 as a psychology officer and has worked in recruitment, assessment, counselling, training, research, and strategy and policy development. She completed the Australian Command and Staff Course in 2004, her Master of Psychology (Clinical) degree in 2005 and was the Commanding Officer of 1st Psychology Unit between 2010 and 2012.*

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## Ex-Service Organisations (ESO) Mapping Project

**Andrew Condon**<sup>1</sup>

*1 Aspen Foundation, Cremorne, Australia*

### Abstract

The ESO Mapping Project was launched by Air Chief Marshal Sir Angus Houston AK, AFC (Ret'd) at the Australian War Memorial on 15 December 2015.

As Australia moves into the fourth post war period of its history (WW1, WW2, SE Asia, Timor/Middle East) it is considered appropriate to ask if our ESOs are organised to support contemporary veterans and their families. Each generation of veterans has been different from the previous one. The most recent generation of veterans have some additional aspects unique to current times. These include the following characteristics:

- full time professional forces in the main, noting specifically that:
- there are significant numbers of females now deploying

- reservist numbers are increasing
- no conscription
- injured service men and women are surviving very significant injuries that in previous campaigns would have proved fatal
- no large scale mobilisation of militia and civilians from local communities
- multiple rotations on operational service
- increased involvement and comment from spouses and families
- modern veterans expect to be able to access all the information they need online.

The ESO Mapping Project was funded by an organisation independent of the ESO sector and government, the Aspen Foundation. The Aspen Foundation is an independent philanthropic organisation that has a history of funding research projects to address health and wellness in the Australian community. The Foundation was approached by individual Ex-Service Organisations (ESO) for support. In response the Foundation chose to support veterans, their families and the ESOs that support them through undertaking this research project, and to make it available to all stakeholders.

The Project was structured with a:

- Project Patron,
- Project Steering Committee, and
- Project Working Group.

The purpose of this Project is to provide a body of research and facts that will support the leadership of the ESO community in their deliberation and planning for the future. This will assist the ESO community in its collective aim of being as effective and efficient as possible in its support for veterans and their families.

The project methodology included stakeholder engagement, literature research, an online survey and mapping relevant data.

For the purpose of this Project a taxonomy was developed to describe in general terms the organisations that make up the ESO community:

- ESOs - member-based organisations supporting veterans and/or families
- Veteran Service Organisations (VSOs) - non-member based organisations supporting veterans and/or families
- Veteran Trusts - trusts dedicated to supporting veterans and/or families
- Veteran Charities - charities dedicated to supporting veterans and/or families.

Veteran and Family Needs were viewed on the basis of acknowledgement that service personnel and family move through a number of phases of the lifecycle of service personnel:

- ADF Service
- Transition from ADF Service (up to discharge)
- Post discharge

The Findings and Observations of the Project cover issues of:

- Demographics of veterans
- Needs of Veterans and Families
- Veteran Charities
- ESO Community
- ESO Support Services
- Service Delivery Standards

### Biography

*Andrew graduated from the Royal Military College Duntroon in 1985 with a degree in Mechanical Engineering from the University of NSW.*

*He is a graduate of the Royal Military College of Science, Shrivenham UK (Master of Science – Operations Research), and the US Army Command and General Staff College, Fort Leavenworth.*

*Andrew was awarded the Conspicuous Service Cross for his role as the Commander of the ADF Joint Task Force that deployed to the Mediterranean to support the evacuation of over 5000 Australian nationals from Lebanon in 2006 during the 34 day war between Israel and Hezbollah. He saw active service when assigned to a US Corps Headquarters in Iraq in 2004.*

*On retirement from the Australian Army in 2007 Andrew took up the appointment of CEO Sydney Legacy until 2015. He was appointed to the Prime Ministerial Advisory Council on Ex-Service Matters, 2011 to 2014.*

*Andrew is a Graduate Member of the Institute of Company Directors and is a Director on the Board of Vasey Housing NSW, the Board of the Gallipoli Memorial Club in the Sydney CBD, and adviser to the Board of RSL LifeCare.*

*Andrew was engaged by the Aspen Foundation to manage the ESO Mapping Project.*

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## From Military Service to Civilian Life: The Impact of Transition on ADF Servicemen And Servicewomen

**Dr Miranda Van Hooff<sup>1</sup>, Dr Stephanie Hodson<sup>2</sup>**

*1 University of Adelaide, Adelaide, Australia,*

*2 Department of Veterans' Affairs, Canberra, Australia*

### Abstract

The Transition and Wellbeing Research Programme, comprising a suite of three studies, examines the impact of military service on the mental, physical and social health of serving and ex-serving ADF personnel and their families. The three studies included in this program are: The Mental Health and Wellbeing Transition Study, The Impact of Combat Study, and the Family and Wellbeing Study. This presentation will provide an overview of the Mental Health and Wellbeing study with a focus on those who have transitioned out of regular ADF service since 2010. It will begin with an overview of the current scientific literature in relation to service leavers and will discuss the challenges and factors known to predict successful transition to civilian life. Following this, it will discuss how transition from military service is currently managed in the Australian Context. It will conclude with a summary of the expected outcomes and lessons learnt from this study with a focus on the strategies required to better aid service personnel and their families through the transition process.

### Biography

*Dr Miranda Van Hooff is the Director of Research at the Centre for Traumatic Stress Studies, University of Adelaide. She is Chief Investigator on The Transition and Wellbeing Research Programme, examining the impact of contemporary military service on the physical, social and mental health and wellbeing of serving and ex-serving ADF personnel. She was the lead researcher on the 2010 ADF Mental Health Prevalence and Wellbeing Study and has conducted several large-scale epidemiological studies of child and adult trauma survivors.*

*Dr Stephanie Hodson, CSC, works for DVA as the Mental Health Advisor in the areas of clinical practice, primary prevention and research. With 22 years experience in military mental health she is an inactive COL in the Army reserve. Dr Hodson completed her doctoral studies investigating the longitudinal psychological effects of deployment to Rwanda in 2002. She was co-principal investigator on the 2011 ADF Mental Health Prevalence and Wellbeing study.*

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### From Soldier to Civilian: 'Culture Clashes' Observed by Mental Health Clinicians and the Impact on the Reintegration Process

**Dr Madeline Romaniuk**<sup>1,2</sup>

*1 Gallipoli Medical Research Institute, Brisbane, Australia*

*2 Queensland University of Technology, Brisbane, Australia*

#### Abstract

**Background:** There is growing recognition of the significance of the cultural reintegration process of leaving the military and returning to civilian life among mental health clinicians as well as organisations providing support for the ex-service population. However, this psychological process remains under investigated within Australian scientific research and is therefore poorly understood in terms of a conceptual framework with which to inform assessment and treatment. To address this gap in the literature, a mixed methods investigation was developed aimed at building a greater understanding of cultural reintegration and psychological adjustment to civilian life following military service.

**Methods:** As part of this mixed methods study, a series of focus groups and interviews were undertaken with 20 health and rehabilitation clinicians, with expertise in veteran mental health. Participants included 7 psychologists, 5 mental health nurses, 3 social workers, 2 occupational therapists, 2 rehabilitation case managers and 1 psychiatrist. Experience with the veteran population ranged between 3 and 27 years. A semi-structured focus group guide was used to explore features of military culture, observations of continued embodiment of military culture among patients and differences between military and civilian culture based on exposure to beliefs and attitudes of patients. The focus groups and interviews were audio recorded and transcribed. The data was then coded using thematic analysis, assisted by NVivo analysis software, version 10.

**Results:** Initial findings indicate dominant themes of 'culture clashes', which reflect strong belief in a dichotomy between civilian culture and military

culture, contributing to difficulties with reintegration following discharge from service. Further detail of the particular dichotomies found to be common across data sources will be presented and discussed with reference to the researchers own pre-existing framework of knowledge.

**Conclusion:** These initial findings are the first step towards conceptualising the factors underpinning cultural reintegration among ex-service personnel and the impact this has on psychological intervention, particularly in the context of 'gold-standard' cognitive behavioural therapy, which aims (in part) to identify and restructure core beliefs and assumptions that hinder wellbeing and adjustment. Further research is currently underway including interviews with ex-service personnel as well as partners of ex-service personnel to compare and contrast with the above findings, contributing to a comprehensive conceptual framework of the adjustment and reintegration process.

#### Biography

*Dr Madeline Romaniuk is a Senior Clinical Psychologist & Project Leader of the Veteran Mental Health Initiative at the Gallipoli Medical Research Institute. She holds a Visiting Research Fellow position at Queensland University of Technology as well as Adjunct Senior Lecturer at the University of Southern Queensland. Dr Romaniuk completed an Honours degree in Behavioural Science in 2008 and went on to complete a Doctorate in Clinical Psychology, which focused on psychometric assessment. In addition to research, Dr Romaniuk has worked as a therapist since 2009 in a variety of settings including public and private hospitals, community government services, NGOs, and private practice.*

*Dr Romaniuk specialises in the assessment and treatment of veterans and ADF personnel suffering PTSD and associated comorbidities as well as the psychological adjustment process of leaving military service and reintegrating into civilian life.*

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### Future Soldier Rehabilitation

**Dr Sam John**<sup>1,2</sup>, Dr Nicholas Opie<sup>1,2</sup>, Prof David Grayden<sup>1</sup>, Prof Terence O'Brien<sup>1,3</sup>, Prof Clive May<sup>1,2</sup>, Dr Thomas Oxley<sup>1,2,3</sup>

1 University Of Melbourne, Parkville, Australia,

2 The Florey Institute of Neuroscience and Mental health, Parkville, Australia,

3 Royal Melbourne Hospital, Parkville, Australia

#### Abstract

Intracranial electrode arrays for recording and stimulating brain activity have facilitated major advances in the treatment of neurological conditions. Traditional arrays require direct implantation into the brain via open craniotomy, which can lead to inflammatory tissue responses reducing efficacy of stimulation and sensitivity of recording. We demonstrate the feasibility of a minimally invasive endovascular neural interface that can record and stimulate the brain from within a cortical vein.

The endovascular neural interface was fabricated on intracranial stents that are presently used in stroke clot removal. The device was delivered into a superficial cortical vein overlying the motor cortex using contrast enhanced angiography and co-axial catheterization in sheep.

The device was successfully implanted in sheep and was able to record somatosensory evoked potentials and stimulate the brain. High fidelity neural information, comparable to existing invasive epidural arrays, could be acquired from the Stentrodes. In-vivo impedances stabilized after 2 weeks and correlated to histological changes. There was no observation of occlusion in any of the implanted animals. The efficacy of the endovascular neural interface in recording and stimulation was comparable to commercially available devices.

Neural recording and stimulation, used to treat neurological conditions that includes epilepsy, Parkinson's disease, depression, post-traumatic stress disorder and motor dysfunction can now be performed using electrodes that can be implanted without risky, open brain surgery.

#### Biography

*Dr. Sam John is a post-doctoral research fellow in the Departments of Electrical and Electronic Engineering and Medicine University of Melbourne and an honorary research fellow at The Florey Institute of Neuroscience and Mental Health. He received his PhD for work towards the design and development of a bionic eye which is undergoing clinical trials in Melbourne. His*

*research interests are in decoding the neural code of the brain focusing on intra-cortical interactions that are essential in executing complex movements. His present research is evaluating the efficacy of an endovascular neural interface that can record and stimulate the brain. He is also working on developing a lower limb brain computer interface that can assist with mobility in people affected by paralysis.*

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### Health Service Use and Disability Compensation Claims in Military Personnel with Multi-Symptom Illness and those with Chronic Diseases

**Stella Gwini**<sup>1</sup>, Prof Andrew Forbes<sup>1</sup>, Prof Malcolm Sim<sup>1</sup>, Dr Helen Kelsall<sup>1</sup>

1 Monash University, Monash Centre for Occupational & Environmental Health, Melbourne, Australia

#### Abstract

Background: Multisymptom illness (MSI) is prevalent among Gulf War veterans and other military personnel. In a baseline study of Australian Gulf War veterans, MSI based on a modified Centers for Disease Control and Prevention (CDC) definition was prevalent in 26% of veterans and 16% of a military comparison group. Therefore, given the considerable proportion of personnel affected by MSI, an understanding of their health service use patterns is important.

Aim: To investigate health service utilisation and disability compensation claims by military personnel with MSI but no chronic disease(s) diagnosis, compared to that in two groups of personnel with (i) at least one diagnosed chronic disease(s) e.g. cancer, heart and renal disease (whose symptom reporting may or may not resemble MSI); and (ii) neither MSI nor chronic diseases. In this study, a modified CDC definition of MSI was used.

Methods: In 2000-02 a cohort of Australian veterans of the 1990-1991 Gulf War and a comparison group was studied, with 66.2% participation. Personnel with MSI and those with chronic diseases were defined using data from this initial study. Participants of the initial study were invited to a follow-up study in 2011-12 and 50% participated. With participants'

consent, data on health service use (e.g. general medical practitioner (GP) and specialist doctor consultations) and Department of Veterans' Affairs (DVA) disability compensation claims for the period 2001-2012 were collected through data linkage with Medicare Australia and DVA.

**Results:** Of the 1,288 males (with adequate data for analysis) who participated, 12% had MSI (with no chronic disease), 17% had at least one chronic disease and 71% had neither MSI nor chronic disease(s). Three quarters of those with MSI (77%) had consulted a GP in the preceding 12-months, and this proportion was similar to that in the chronic disease group (74%, risk ratio (RR)=1.04; 95% confidence interval (CI) 0.92-1.19) but significantly higher than that of personnel without MSI/chronic disease (60%, RR=1.24, 95% CI 1.11-1.39). The proportion of personnel with MSI who consulted one of psychiatrist, gastroenterologist, neurologist or respiratory physician in the 10 years preceding follow-up was similar to that in the chronic disease group but significantly higher than that among those without MSI/chronic diseases. Just under half (44%) of those with MSI had submitted a successful DVA disability compensation claim, compared with 37% in the chronic disease group and 27% among those without MSI/chronic disease. The most common disabilities claimed by all three groups were musculoskeletal/connective tissue and nervous system/sense organs. Disabilities claimed for were similar across the three groups, except for musculoskeletal/connective tissue claims (significantly higher in MSI group than chronic diseases group) and mental disorder claims (significantly lower in MSI group than chronic disease group).

**Conclusions:** Overall, health service use and disability claims were significantly higher in the group with MSI than those without MSI/chronic illness but were comparable with the group with chronic diseases. These findings indicate the substantial health service needs of those with MSI and have important implications for those providing care and support for them.

### Biography

*Ms. Stella Gwini is a Biostatistician and PhD Student with the School of Public Health and Preventive Medicine at Monash University. Her PhD research investigated the longitudinal changes in prevalence of multiple symptoms among Gulf War veterans and how the changes relate to health service use and other health outcomes.*

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## Hostage Post-Release Support Utilising a Psychological First Aid Framework

**MAJ Kelly Tomlinson<sup>1</sup>**

*11st Psychology Unit*

### Abstract

Being held hostage or as any captive victim is a unique form of critical incident, characterised by one's sudden deprivation of liberty, taken at the hands of a possibly unstable and desperate perpetrator, in the midst of a chaotic and uncontrolled environment. A review of the psychological and physical effects of being taken hostage; coping and survival strategies and the strength and impact of the provision of psychological first aid for individuals who have been released from hostage or captive situations will be examined. Immediate support to an individual post-release, ought to be sensible, considered, and guided by a framework which works with the individual's current level of comfort. Within the contemporary military context, the need for a tailored and considered hostage support framework to guide soldiers, who may prove first responders, is of paramount need to ensure timely and supportive actions are provided, to assist long term recovery.

### Biography

*Major Tomlinson graduated from Murdoch University in 2005 with a Bachelor of Arts in Psychology (Honors). Following graduation, she commenced employment as a Behaviour Therapist within the field of Applied Behaviour Analysis (ABA) for children with autism, attention problems and learning difficulties. Major Tomlinson received her Commission into the Australian Army Psychology Corps (AAPSYPCH) in 2009 and was awarded Student of Merit on her Regimental Officers Basic Course. Major Tomlinson has fulfilled appointments within 1st Psychology Unit, The ADF Centre for Mental Health and within Joint Health Command. Her staff appointment at the ADF Centre for Mental Health provided an opportunity to impart innovation within a reinvigorated mental health training continuum for mental health practitioners and implement advanced trauma training to a selected pool of clinicians, expanding their repertoire of*

*clinical skills for enhanced service provision. In 2012, MAJ Tomlinson deployed as an embedded Military Psychologist during Operation Slipper, providing close and general psychological support and critical incident mental health support to the Middle East Area of Operations. Later that same year, MAJ Tomlinson also deployed to the Solomon Islands as part of the Force Extraction Team.*

### Reference:

Hobfall, S.E., Watson, P., Bell, C.C., Bryant, R.A., Brymer, M.J., Friedman, M.J., et al. (2007). Five essential elements of immediate and mid-term mass trauma intervention: Empirical evidence. *Psychiatry*, 70, 283-315.

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## ICD-10 Mental Disorder in Australian Defence Force Personnel and Australian First Responders: Prevalence and Predictors in Two Occupational Settings

**Dr Miranda Van Hooff**<sup>1</sup>, Mrs Maria Abraham<sup>1</sup>,  
Dr Ellie Lawrence-wood<sup>1</sup>, Dr Amelia Searle<sup>1</sup>,  
Professor Sandy McFarlane<sup>1</sup>, Dr Blair Grace<sup>1</sup>,  
Mr Greg Crossman<sup>2</sup>, Mr Michael Morgan<sup>2</sup>,  
Denise Keenan<sup>2</sup>, Mr Mick Smith, Dr Stephanie  
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<sup>2</sup> South Australian Metropolitan Fire Service, Adelaide, Australia

<sup>3</sup> Department of Veterans' Affairs, Canberra, Australia

### Abstract

Military personnel, due to the nature of their work are exposed to a range of stressors in both the deployed and non-deployed environment, which have the potential to impact negatively on physical and mental health. The 2010 Mental Health Prevalence and Wellbeing study showed that while the rates of affective disorders were higher in Defence Force members than the general community and alcohol

disorders lower, the overall prevalence of 12-month disorder was not different. How these rates compare to those in other Australian first responders such as fire fighters, however, has never been examined. The current study examines rates of ICD-10 mental disorder and other self reported mental and physical health symptoms in ADF members and Australian career fire-fighters, with a particular focus on the moderating role of lifetime trauma, work related trauma exposures (including injuries) and organisational stressors on the development of mental disorder in these two populations. The nature and magnitude of PTSD symptoms will be discussed, including an overview of the types of events most likely to result in PTSD. The current study is the first Australian study to gain a snapshot of the mental, physical and social health of an entire fire service, and to compare these rates with the Australian Defence Force. This presentation will conclude with a discussion of the implications of these findings for service delivery across these two inherently dangerous occupations.

### Biography

*Dr Miranda Van Hooff is the Director of Research at The University of Adelaide, Centre for Traumatic Stress Studies. She is Chief Investigator for The Transition and Wellbeing Research Programme, examining the impact of contemporary military service on the physical, social and mental health and wellbeing of serving and ex-serving ADF personnel. She was the lead researcher on the 2010 ADF Mental Health Prevalence and Wellbeing Study, which examined the prevalence of Mental Disorder in the entire ADF. She has been an author, lead researcher and program manager on numerous large-scale longitudinal epidemiological studies of child and adult trauma survivors including a representative study of the health and wellbeing of South Australian Metropolitan Fire Service personnel.*

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## Injuries Associated with Sport Participation Amongst Australian Army Personnel

**Dr Robin Orr**<sup>1</sup>, Dr Ben Schram<sup>1</sup>, Dr Rodney Pope<sup>1</sup>

*1 Tactical Research Unit, Bond University, Gold Coast, Australia*

### Abstract

**Purpose:** Injuries are of detriment to military capability and interrupt active duty. Limited research exists regarding injuries associated with sports participation in army personnel. The purpose of this study was to investigate patterns of injury from sport participation in Australian Regular Army (ARA) personnel, in order to guide prevention strategies.

**Methods:** Injury data was obtained over a two-year period (01 July 2012-30 June 2014) from the Department of Defence Workplace Health, Safety, Compensation and Reporting database. The data were analysed descriptively to ascertain the sports giving rise to the largest numbers of injuries, the leading body sites of the sports injuries, the predominant natures of the sports injuries, and the key mechanisms of the sports injuries.

**Results:** Sports participation accounted for 11% (n=1,092) of reported injuries (n=9,828) over the data collection period. Soccer was found to have the highest number of sporting injuries (n=254, 23.26%), followed by rugby union/league (n=250, 22.89%), touch football (n=203, 18.59%), Australian rules football (n=131, 12.00%) and basketball/netball (n=130, 11.90%). The ankle, knee and shoulder were the most commonly injured joints (n=212, 21.90%; n=166, 17.15%; n=112, 11.57% respectively), with soft tissue injury, dislocation and fractures being the most common nature of injury (n=533, 55.06%; n=123, 12.71%; n=115, 11.88% respectively). These injuries were most commonly due to contact with objects (n=340, 35.12%), falls (n=265, 27.38%) and muscular stress (n=250, 25.83%).

**Conclusion:** Sports participation is a leading cause of injuries in ARA personnel, with soccer and rugby being the leading sports associated with these injuries. The ankle, knee and shoulder are the joints most commonly injured in sporting activities in ARA personnel. It would appear that the current injury rates, locations and mechanisms are similar to those reported in historical defence injury reports.

### Biography

*Rob served for over 23 years in the Australian Regular Army as an infantry soldier, physical training instructor, physiotherapist and human performance officer. Still serving in the Army Reserve, Rob took up an appointment at Bond University where he currently co-leads the Tactical Research Unit. With a PhD in occupational load carriage for military personnel, Rob has over 30 peer reviewed publications specialising in tactical populations alone and has been invited to present his research both nationally and internationally.*

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## Injury and Musculoskeletal Disorders in Australian Gulf War Veterans: 20 Years After Deployment

**Dr Helen Kelsall**<sup>1</sup>, Ms Stella Gwini<sup>1</sup>, Dr Jillian Ikin<sup>1</sup>, Prof Andrew Forbes<sup>1</sup>, Prof Malcolm Sim<sup>1</sup>

*1 Monash University, School of Public Health and Preventive Medicine, Melbourne, Australia*

### Abstract

**Background:** Musculoskeletal disorders (MSDs) are common in the Australian community, and globally account for 6.8% of total disability-adjusted life years (DALYs) whilst injuries account for 11.2%. Injuries and MSDs cause considerable morbidity in certain groups, including military and veteran populations.

**Aims:** The study investigated whether Australian Gulf War veterans (veterans) in the Follow Up Study 2011-2012 had a higher prevalence of injuries in the previous 12 months and MSDs than the military comparison group.

**Methods:** A self-administered postal questionnaire asked about doctor-diagnosed or treated osteoarthritis, rheumatoid arthritis, other inflammatory arthritis, gout and osteoporosis since January 2001 and injuries that occurred in the previous 12 months which were "bad enough to interfere with daily activities", the frequency of injuries, the main cause of the two most recent injuries, the type of activity being undertaken, the type of health service used and any time off work or study. In addition, injuries in the previous three years which involved being dazed, loss of memory



or loss of consciousness were assessed to identify events that might have involved concussions.

**Results:** Of the final eligible cohort, 715/1,330 veterans (54%) and 675/1,449 comparison group (47%) participated. Analyses were limited to males. 38.8% veterans and 37.5% comparison group reported at least one injury in the previous 12 months. The most common event types for veterans vs comparison group respectively were low fall <1 metre 22.4% vs 15.0%,  $p=0.041$ ; cut/pierced by a knife/tool/other 14.4% vs 15.5%; 'Other-sport/exercise related activities' 14.4% vs 21.7%,  $p=0.038$ ; and 'Other' 18.8% vs 26.1%  $p=0.056$ .

Sports was the activity-type most frequently reported (33.5%) when injuries occurred compared to paid work, unpaid work or leisure activities, and the study groups were similar. Approximately 41% participants in both groups did not attend any health service for treatment, whereas 57% in both groups attended a general practitioner or specialist. Possible injury severity indicators, i.e. inpatient hospital attendance (14% veterans vs 9% comparison group) and time off work/study as a result of their injury (42% veterans vs 39% comparison group) were similar. Veterans were more likely to report an injury which potentially involved a concussion (11% vs 7%;  $p=0.013$ ).

The most prevalent MSD was osteoarthritis (16% veterans vs 14% comparison group, followed by other inflammatory arthritis and gout. The most common osteoarthritis sites were knee, back and hand (57%, 32% and 21% veterans vs 65%, 30% and 22% comparison group, respectively). There were no statistically significant differences between groups in regard to MSD categories. Hip osteoarthritis was significantly less common in veterans than the comparison group (adj RR 0.44, 95% CI 0.20-0.95).

**Conclusions:** Injuries are a common cause of morbidity in Gulf War veterans and comparison group with sporting injuries the most common cause. Indicators of injury severity were similar in the groups but suggest that injury is an important cause of morbidity in these populations. MSD were commonly reported, also similarly in the groups, and preventive programs for both injuries and MSD may require further development to address the health burden.

### Biography

*Dr Helen Kelsall is a Senior Research Fellow at the Monash Centre for Occupational and Environmental Health. She was a lead investigator on the 2000-02 and 2011-12 Australian Gulf War Veterans' Health Study, an investigator on the Transition and Well-being Research Program, and other collaborative*

*studies investigating physical, psychological and social health and well-being in military and veteran populations.*

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## Intergenerational Effect of Deployment: Findings from Vietnam Veterans Family Study

**Dr Galina Daraganova**<sup>1</sup>, Dr Walter Forrest<sup>2</sup>,  
Dr Ben Edwards<sup>1</sup>, Kyleigh Heggie<sup>3</sup>

*1 Australian Institute Of Family Studies, Melbourne*

*2 The University of Queensland, Australia*

*3 Department of Veterans' Affairs, , Australia*

### Abstract

The Vietnam Veterans Family Study (VVFS) is the most significant research program ever undertaken by the Australian Government into the health of the families of Australia's Vietnam veterans. Over 27,000 people participated in the studies, including Vietnam veterans, partners and their children, and Defence Force personnel of the same era who did not deploy to Vietnam, and their families, as a control group.

The Program aimed to examine the physical, mental and social health of Vietnam veterans and their families, covering a broad range of health outcomes for these people. Of particular interest to researchers and the Australian veteran community was the investigation into the intergenerational impact of deployment. Does it exist? and, what does it mean to those sons and daughters that may be affected?

In this presentation AIFS and DVA will illustrate that operational service affects more than just the person who serves; it can also impact on veterans' children into the future. We will walk through the main findings and detail the impact of active service on the long term physical, mental and social health outcomes of the sons and daughters of Australia's Vietnam veterans. The discussion will also focus on which risk, protective and mediating, factors might account for the effects that have implications for service delivery.

### Biography

*Dr Galina Daraganova is a quantitative psychologist specialising in social statistics and network-based*

social processes. With a background in quantitative psychology, her research focuses on use of large-scale surveys, particularly longitudinal studies that include multiple family members to analyse data across a wide range of issues. Her research interests focus on social and family determinants of successful developmental transitions during childhood, adolescence, and young adulthood and involve analyses of health and education inequalities, soft skills development, and role of others.

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### International Engagement Over the Ditch – Operational Psychology

**LTCOL Laura Sinclair<sup>1</sup>, MAJ Kate Milburn<sup>2</sup>**

*1 1st Psychology Unit, 2HQ Joint Forces NZ,*

#### Abstract

International engagement is a key focus for 1st Psychology Unit and NZDF Psychology. Throughout 2015-16 there has been deliberate action taken between the two nations to recognise the importance of leadership in transnational operational psychology and appreciation of cultural and military service differences. The development of an ambitious interoperability strategy that has been built on a partnership of knowledge exchange has generated a healthy agenda of enquiry and katecuriosity. The joint effort approach has produced a partnership of solutions to training and psychological support tasks within the deployment context through shared understanding of what the ADF and NZDF operational psychology capability has to offer. A case study format is used to illustrate the alliance between the two nations as they come together through an ANZAC spirit of collaboration and exchange within the unique world of operational psychology.

#### Biography

*LTCOL Laura Sinclair is the Commanding Officer of 1st Psychology Unit - the operational Army psychology unit within Forces Command. LTCOL Laura Sinclair is a psychologist, Monash University Masters graduate and has a broad range of Army experience ranging from aviation human factors through to command and control of health facilities. Her operational experience is extensive with twelve operational tours that have taken her to the Solomon Islands, Iraq, Afghanistan*

*and Antarctica. She is the recipient of the Conspicuous Service Cross (CSC) for command and leadership of Joint Health Unit North Queensland.*

*MAJ Kate Milburn is the Senior Psychologist, HQ Joint Forces NZ. MAJ Kate Milburn is an organisational psychologist responsible for the provision of psychological support to NZDF deployed personnel on operations. MAJ Kate Milburn has a Masters in Science and Post Graduate Diploma in Industrial/Organisational Psychology from Massey University. Her operational experience includes deployments to Timor Leste, Solomon Islands and Uganda. She has a strong interest in coaching and developing leaders within NZDF. MAJ Kate Milburn is a found member of the NZ Army Women's Development Group.*

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### Introduction to the Defence Health Manual: The One Stop Health Policy Shop

**WGCDR Kath Stein<sup>1</sup>, LTCOL Toni Bushby<sup>1</sup>**

*1JHC, Campbell Park, Australia*

#### Abstract

Health policy that directs the delivery of health care, the practices of its health personnel and the requirements of Commanders and managers to support their personnel currently spans a range of formats that are disconnected and complex to navigate. Surgeon General Australian Defence Force has directed the consolidation of all health policy into a single health policy manual.

Joint Health Command has developed a new framework for health policy and introduces the Defence Health Manual (DHM). The DHM replaces health related Defence Instructions, Health Directives, extant Health Bulletins, absorbs HLTHMAN and Health Instructions. This three volume Manual will be the single source for authorised health policy in Defence. The DHM is being implemented in a three phase approach over two years.

This presentation will provide an introduction to the DHM, an overview of the navigation within and between policies, an explanation of the three phases and future direction for health policy management in Defence.

### Biography

WGCDR Kath Stein has had a range of administrative and operational postings in her career as a RAAF Nursing Officer. Currently serving as the SO1 Health Policy Coordination within Directorate of Military Medicine the delivery of the DHM is her primary focus.

LTCOL Toni Bushby has had a range of administrative, operational and command postings in her career as an Army Nursing Officer. Currently serving as the SO1 Health Policy (Defence Health Manual) within Directorate of Military Medicine, she is working collaboratively with WGCDR Kath Stein to achieve conversion and delivery of the DHM in line with SGADF direction.

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## It's Time to RESET: Proof of Concept of a Coach-Based, Skills Building Group Program for Current Serving ADF Members

LTCOL Jacqueline Costello<sup>1</sup>

*1 ADF Centre For Mental Health, Mosman,*

### Abstract

RESET is an evidence-informed mental health prevention program developed by the ADF Centre for Mental Health (ADFCMH) in conjunction with Phoenix Australia. The program aims to prevent the progression from emerging mental health symptoms to a diagnosable disorder in order to mitigate the associated costs to current and future capabilities. RESET targets personnel experiencing mild to moderate distress and/or impairment.

Across six modules in a group program format, RESET utilises a self management approach to assist participants to build skills across a range of quality of life domains including wellbeing, family, workplace, health, and social connection. RESET was designed culturally for the ADF population and serves a critical socialisation role. Participation in the program can provide a crucial "soft landing" to access mental health intervention and reduce potential stigma and barriers to care.

To date, the RESET program has been delivered on seven occasions. N = 67 participants have included Australian Army, Navy and Airforce personnel across

all ranks. Going forward, RESET will be positioned to integrate with other Single Service initiatives across the resilience space, in the rehabilitation and recovery framework, in the decompression and reintegration phase of the deployment cycle and in the ADF transition space.

This presentation will describe how RESET satisfied the parameters of a proof of concept pilot and will outline Phase 2 of the program in building an evaluation and regional workforce skilling platform to ensure the program matures to meet the needs of all stakeholders.

### Biography

LTCOL Jacqueline Costello was commissioned as an Officer in the Australian Army Psychology Corps in 2002 and has served in a wide variety of postings across Army and Joint units in both garrison and deployed settings. She holds a Masters degree in Organisational Psychology and is currently the Officer-In-Charge of the ADF Centre for Mental Health.

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## Joint Project 2060 - ADF Deployable Health Capability Update

AIRCDRE Michael Paterson<sup>1</sup>, CAPT Matt Blenkin<sup>1</sup>

*1 Joint Health Command, Canberra, Australia*

### Abstract

The ADF requires a contemporary and innovative deployable health capability that builds on current capabilities in order to enable effective support against current and emerging health threats. Existing Role based and stand alone health capabilities require capital enhancement and improved support/technology refresh systems to enable future delivery of best military medicine practice. JP 2060 seeks to enhance the existing deployable health capability through two project phases: JP 2060 Phase 3 seeks to modernise and enhance the existing ADF deployable health capability by introducing a holistic approach to the delivery of deployed health support. It will acquire health materiel for Army and Air Force, and establish a support and sustainment system that will manage the entire ADF deployable health capability. This Phase aims to deliver the final capability in

2023.JP 2060 Phase 4 will deliver deployable health knowledge management systems to aid in clinical decision making and health planning with the creation and maintenance of a deployable electronic health record. This project aims to deliver in the year of 2023.

This presentation will outline the current status of JP 2060 Phase 3 and Phase 4. Project team representatives from Joint Health Command, Army, Navy and Air Force will be present to answer Service specific questions.

### Biography

*AIRCDRE Mike Paterson joined the Royal Australian Air Force in 1984 following training and consolidation as a Registered Nurse in Queensland.*

*Over the past three decades AIRCDRE Paterson has served on most Air Force health units including No's 3, 4 and 6 RAAF hospitals, in roles spanning clinical, instructional, staff and command.*

*AIRCDRE Paterson has commanded at detachment, Unit and Wing levels. He has provided aero-medical support to DVA veteran commemoration visits to Gallipoli, the Western Front and Thailand. Mike has also deployed on operations in Bougainville, the Solomon Islands, East Timor and Iraq and was awarded a Distinguished Service Medal for leadership in action in Iraq during 2004-2005.*

*In recent years AIRCDRE Paterson has undertaken staff roles within Air Force Headquarters and Joint Health Command. In January 2010 he was appointed Officer Commanding Health Services Wing where he commanded the Air Force deployable health capability for three years.*

*AIRCDRE Paterson is currently the Director General Health Capability, Joint Health Command and the Director General Air Force Health Services.*

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## Male Dominated Work Places – Are There Lessons for the Military from Working Well: Mental Health and Mining?

**Dr Jane Rich**<sup>1</sup>, Prof Brian Kelly<sup>1</sup>, Robyn Considine<sup>1</sup>, A/Prof Carole James<sup>1</sup>, Dr Ross Tynan<sup>2</sup>, Prof John Wiggers<sup>1</sup>, A/Prof Terry Lewin<sup>1</sup>, A/prof Kerry Inder<sup>1</sup>, Jorgen Gullestrop<sup>3</sup>

*1 University of Newcastle, Callaghan, Australia*

*2 Hunter Institute for Mental Health, Newcastle, Australia*

*3 Mates in Construction, Brisbane, Australia*

### Abstract

**Background:** The Australian mining workforce is predominantly a male workforce (85%), who are increasingly exposed to high volatility and subsequent job insecurity. Similarly, the military also has a predominantly male workforce with mental health and well-being of serving and ex-serving Australian Defence Force personnel of paramount importance.

Addressing mental health in the mining workforce has not traditionally been a focus, yet it is increasingly being recognised within OHS frameworks. Mental illness can affect the workplace through: Absenteeism, Presenteeism and workplace injuries. The most common mental health concerns are depression, anxiety, post-traumatic stress, substance use, and suicide, with comorbidity between conditions common. The economic costs and personal costs of not addressing mental health problems are significant. The NSW Mineral Council report estimated industry productivity losses from mental illness range between \$AU288 and \$AU429 million per year. Workplaces are important sites to promote better mental health and address mental health problems, with employment being a protective barrier against mental illness.

**Objectives:** Assess the feasibility and acceptability of a multicomponent mental health program in the Australian Coal Mining Industry and to explore lessons learned in working within male dominated workplaces.

**Methods:** A case control study in New South Wales and Queensland, with four coal mine sites receiving the multicomponent "Working Well Mental Health Program" and four control sites. Survey data on confidence to identify mental health problems was collected before and after the multi-component intervention: 1) a general awareness education and peer-assisted model of support; 2) supervisor training; and 3) a policy review.

Results: The Working Well Mental Health Program promoted a healthy workplace culture including stigma reduction, to promote support among work teams and groups. This program was well received by employees, supervisors and managers. Positive changes in knowledge, attitudes and help seeking behaviours and improvements in levels of stigma were found from the education components. The policy review identified that management were committed to the promotion of mental health and prevention of mental ill-health, with key parties involved in psychological health and safety initiatives, however it was identified that not all levels of the organisations were equally involved.

The success of this mental health program is the result of a combination of evidence-based programs and services, embedded within workplace policy and undertaken with a robust organisation-wide strategic approach.

The peer-based model was a strength of this project. The results identified the model as appropriate and relevant in the mining environment. Sites had no difficulty recruiting volunteers for connector training, which shows a willingness and engagement with mental health within the work place.

Conclusion: This multi-component intervention in coal mines was well accepted and associated with positive outcomes. The workplace provides unique opportunities to support better mental health. Mental health, wellbeing and physical health are closely connected, and mental health interventions are best integrated within existing work health and safety policy and practice. Suggestions for future peer-based models of support could be beneficial in the military particularly with the existing sense of belonging and comradery that the military can provide.

### Biography

*Jane Rich (B. Dev.stud (hons), PhD) is a postdoctoral research fellow with the Centre for Resources Health and Safety and the Centre for Rural and Remote Mental Health at the University of Newcastle. Jane Rich is researcher with special interests in how psychosocial and environmental factors impact health and wellbeing.*

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## Matching Physical Capacity to Work – Drawing the Parts Together

Helen Moody<sup>1</sup>

*1 CHG, Mile End, Adelaide, Australia*

### Abstract

Rationale: Physically matching people to jobs is problematic even with no injuries present, but with a specific injury affecting movement patterns the selection of tasks becomes a complex process. Musculo-skeletal injuries remain the highest injury category in the Defence Force and achieving a sustainable return to work using a goal orientated approach is crucial to the process. This presentation will explore and widen the traditional method of matching physical capacity to a task to one where each posture and movement required in a job is evaluated in a practical assessment process.

Content: A different model of assessment and management will be proposed. Objective evidence from the initial assessment process, such as functional assessment, and postural training tools such as wearable technology can be used to assist with the sustainability of the return to work process. These tools can help give the person a sense of control over the connection from rehabilitation to work tasks. A goal setting approach can then be undertaken that relates the postures required in the job to personal and work place goal setting and attainment.

A case study using the identification of duties following a diagnosed thoracic outlet syndrome, will be used to showcase the process from diagnosis through to writing medical restrictions and then interpreting those medical restrictions for return to work duties.

Relevance & implications: The audience will be challenged to consider the implications of various postures and movements on the return to work process and how to establish the goals of return to work from both the workers and employers perspective. This includes incorporating targeted medical restrictions, acknowledgement of psychosocial factors by incorporating strategies into the duties to be undertaken and a method of graduating the tasks on the basis of posture identification.

### Biography

*Helen is a consultant Occupational Therapist and Certified Professional Ergonomist at Corporate Health Group in Adelaide with a background in hand injuries, burns, rheumatology and orthopaedic rehabilitation. Helen has applied this medical knowledge to posture and movement as it relates to ergonomics. She works across a wide range of industries undertaking job analysis for injury prevention and return to work purposes, project work with various companies to solve problems associated with musculoskeletal risk factors and delivers training programs focusing on posture training relevant to specific job roles. One of her special areas of interest is in Participatory Ergonomics where there is collaborative development of ergonomic interventions including design ideas but also in seeking solutions for individuals returning to work with complex needs.*

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## Mental Health Problems in Deployed ADF Members: Effects of Deployment-Related and Pre-Deployment Trauma, and Pre-Deployment Mental Health Problems

Dr Amelia Searle<sup>1</sup>, Dr Miranda Van Hooff<sup>1</sup>,  
**Dr Ellie Lawrence-wood<sup>1</sup>**, Dr Blair Grace<sup>1</sup>,  
Ms Elizabeth Saccone<sup>1</sup>, Dr Carol Davy<sup>2</sup>,  
Ms Michelle Lorimer<sup>1</sup>, Professor Alexander  
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<sup>1</sup> University of Adelaide, Adelaide, Australia

<sup>2</sup> South Australian Health and Medical Research Institute (SAHMRI), Adelaide, Australia

### Abstract

Both traumatic deployment experiences and pre-deployment traumas increase military personnel's risk of PTSD and depression. However, only cross-sectional studies have assessed whether pre-deployment trauma affects stress reactions to deployment trauma. Our study prospectively examines whether pre-deployment trauma moderates associations between deployment trauma and post-deployment PTSD and depressive symptoms after accounting for pre-deployment

psychological symptoms in Australian Defence Force (ADF) veterans.

In the ADF Middle East Area of Operations (MEAO) Prospective Study, currently-serving military personnel deployed to Afghanistan in 2010-2012 (n=1138) completed self-reported measures at pre- and post-deployment.

In multivariable regressions, significant interaction terms suggested associations between deployment trauma and post-deployment PTSD and depressive symptoms were stronger for those with greater pre-deployment trauma. Once pre-deployment psychological symptoms were adjusted for, these interactions disappeared. Instead, deployment trauma and pre-deployment psychological symptoms were directly associated with post-deployment psychological symptoms, and pre-deployment trauma was indirectly associated with post-deployment psychological symptoms through pre-deployment psychological symptoms. Similar results were seen for prior combat as a moderator.

Results support the cumulative negative effect of trauma, regardless of its source. While pre-deployment trauma does not amplify the psychological response to deployment trauma, it is indirectly associated with increased post-deployment psychological symptoms. Pre-deployment psychological symptoms should be considered within pre-deployment prevention programs, and deployment-trauma within post-operational screening.

### Biography

*Dr Ellie Lawrence-Wood is Senior Research Fellow at The University of Adelaide, Centre for Traumatic Stress Studies. She has been involved in numerous large scale projects focussed on the health and wellbeing of Australian Defence Force personnel. She is Investigator and Study Manager for the Impact of Combat Study (Transition and Wellbeing Research Programme), which examines the longitudinal physiological and psychological impacts of deployment to a combat zone. She was also responsible for the Mothers in the MEAO project, aimed at understanding the specific health and psychosocial wellbeing impacts of deployment, for Australian mothers who have deployed to the MEAO.*

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### Mental Health Risk Assessment Training: A Blended Online and Face-To-Face Training Program for Defence Mental Health Professionals

Associate Professor Darryl Wade<sup>2</sup>, Dr David Said<sup>1</sup>

*1 ADF Centre For Mental Health, Mosman*

*2 Phoenix Australia, Melbourne,*

#### Abstract

In military and community health settings, risk assessment and management are fundamental competencies required by mental health professionals to provide the highest level of care and protection to clients and others.

In 2014, the Department of Defence revised the policy to address the assessment and management procedures for Defence members at risk of suicide to also include members at risk of self-harm and harm to others. In 2015, Defence contracted Phoenix Australia to provide a new blended training package to train Defence mental health professionals in risk assessment and initial management for self-harm, suicide and/or harm to others.

The training package comprises:

- A one hour e-learning primer
- A one day face-to-face facilitator-led training session
- A one hour e-learning refresher.

The training will be delivered nationally to defence mental health professionals using the CAMPUS learning platform and a Train the Trainer model.

The training content covers:

- Relevant Defence policy
- Documentation and reporting requirements
- Recovery-oriented model of risk assessment and initial management of mental health problems
- Risk definitions, risk and protective factors, and levels of risk severity
- Assessment and formulation of type and level of risk, including seeking collateral information
- Management and treatment interventions based on type and level of risk

- Communications with significant others including family or other relatives, health professionals and command
- Safety planning for clients at risk
- Monitoring and re-assessment of clients at risk.

This presentation will provide an overview of major project activities and deliverables including:

- Stakeholder consultations findings
- Review of best practice risk assessment findings
- Online and face-to-face training program materials
- Audio-visual demonstration materials.

#### Biography

*Dr David Said is a clinical psychologist and the Clinical Programs Manager at the ADF Centre for Mental Health. He has worked with complex presentations in the ADF usually including comorbid PTSD, alcohol and mTBI for the past 4 years. Previously he worked for the NSW Dept of Health in a dual diagnosis mental health service. He has been an Army Reserve military psychologist for the past 18 years and has deployed on several occasions to Afghanistan, Iraq, East Timor, Cyprus, the Solomon Islands and Pakistan.*

*Associate Professor Darryl Wade joined Phoenix Australia in 2008 after many years' experience as a clinical psychologist in a range of settings. Darryl has developed and managed a range of mental health initiatives to improve access to effective treatment and support for people affected by trauma and disaster including past and present Defence force members and their families, and survivors of the 2009 Victorian bushfires. His research interests include screening and brief interventions for substance use and translating research findings into practice. He completed his PhD at the University of Melbourne in 2006 and has published widely. Darryl is a member of the Australian Psychological Society (APS) and the APS College of Clinical Psychologists.*

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## Mental Health Screening Continuum: Results of the Medical Officer Mental Health Screen Pilot Evaluation

LTCOL Kate Henderson<sup>1</sup>

*1 Department of Defence*

### Abstract

A primary aim of mental health screening is to facilitate early intervention for treatment of mental health problems and disorders, thus enabling symptoms to be addressed before they become entrenched and cause broader psychosocial problems for the individual. The objective of the Mental Health Screening Continuum (MHSC) project is to implement a sustainable system for optimising the chances of early identification of psychological problems and provide a stepping stone for pathways to appropriate early intervention and care for all members of the Australian Defence Force (ADF), irrespective of deployment status.

In 2015 an eight week trial of the Medical Officer Mental Health Screen (MO MHS) was conducted at the Edinburgh Health Centre and Albatross Health Centre. The aim of this trial was to determine if the implementation of mental health screening in primary health care is achievable and sustainable. The results of the trial will be presented and the proposed outcomes discussed.

### Biography

*Kate Henderson is a military psychologist with 17 years experience in the Australian Army. She has served all over the country, including being deployed to East Timor and Iraq, and is currently posted to Canberra in Joint Health Command as the Assistant Director Operational Mental Health within Mental Health, Psychology and Rehabilitation Branch. Kate has a Masters in Clinical Psychology and is passionate about delivering timely and clinically appropriate services to the personnel of the ADF.*

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## Moving Military Hospital Management into the Digital Age – The Virtual Hospital as a Tool for Improved Efficiency, Training, Communication and Predictive Modelling

CAPT Nick Alexander<sup>1</sup>, LTCOL Jamie Phillips<sup>1</sup>

*1 2nd General Health Battalion*

### Abstract

Hospital management processes are a critical enabler to the smooth and effective care of individuals presenting for treatment at a military health facility. Tools which drive hospital management processes need to be intuitive and adaptive in order to capture necessary information to support optimised facility function. More broadly they need to be able to communicate with assets of the wider health operating system to achieve optimised health effect within an Area of Operations.

During 2016, the 2nd General Health Battalion (2 GHB) trialled the use of a 'Virtual Hospital' on Exercise GIANT VIPER and HAMEL, in an attempt to transition Hospital Management Cell (HMC) processes into the digital age. Achieved via the use of Microsoft Excel, this formula driven schematic achieved a number of noticeable improvements to efficiency at a local level including:

- Decreased need for interference from administrative staff in clinical functions, via setting controls for the push and pull of pertinent information
- Enhanced warning of critical supply shortfalls, such as blood, medication and oxygen supplies
- Real time quantitative data capture for post activity reviews and training
- Significantly improved fidelity of critical capability/hospital state
- Simplification of multiple processes to one medium, improving HMC efficiency
- The ability to demonstrate future capability (Role 2E Large) in a training environment, to inform strategic capability decision making.

Beyond these local effects a number of broader uses were identified and trialled in brief, appearing to show promise for further development:

- Real time hospital state feeds to Casualty Regulation Cells
- Predictive modelling processes to better inform casualty calculation, equipment, and manning requirements of facilities, based on recent historical data



This presentation will include a demonstration of the functionality of the 2 GHB 'Virtual Hospital', whilst also exploring its utility as a tool for predictive modelling within deployable health provision in the Australian Defence Force.

### Biography

*CAPT Nick Alexander is a physiotherapist currently posted to the 2nd General Health Battalion. He was appointed to the Royal Australian Army Medical Corps in February 2008, whilst completing undergraduate studies in Physiotherapy via the Army Undergraduate Scheme. His areas of clinical interest lie in musculoskeletal rehabilitation and complex pain management. He is currently completing a Masters of Medical Science in Pain Management through the University of Sydney.*

*CAPT Alexander's operational experience includes deployment on OP Slipper in 2013. He has also participated in the Army Aboriginal Community Assistance Program as part of AACAP 23 in Laura, Queensland.*

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## Nationwide Improvement of Business Processes in Garrison Health Operations

### Dr Isaac Seidl

*1 Joint Health Command, Canberra BC, Australia,*

*2 James Cook University, Townsville, Australia*

### Abstract

The Australian Defence Force provides health services to 55000 permanent ADF members and 15000 reservists through 54 health centres nationwide in Australia and one health centre in Butterworth Malaysia. The work was done with the engagement of all 1800 staff that provide these services, uniformed military, public service and civilian contractors.

Organisational reform over the last 10 years amalgamated health care delivery from disparate and varied health services delivered by Army, Navy and Air Force health services as well as the Joint Defence Health Service Division, into the single Joint Health Command. Practices and Procedures were widely varied and in desperate need of

standardisation. As a result of these variations, customers were unprepared for the differences in policy and procedure encountered in our health facilities, and this led to customer dissatisfaction, as well as extended waiting times where health care providers were unsure of the most efficient way to delivery effective health services.

A project was commenced in 2013, the first phase of which saw the development of 24 key business processes that formed the core business of Joint Health Command's Garrison Health Services. These were implemented throughout 2015. Business process mapping was employed across these processes, with the engagement of clinicians across disciplines, widely accepted by staff, and data monitoring continued.

The improvement was implemented and data on all measures has improved, specifically access, complaints and customer satisfaction. Staff were engaged in both the development of process maps and in the change management required to implement them. Communities of Practice were implemented to assist with the electronic processes, through Defence's introduction of the Defence eHealth System, a national electronic health record that is compliant with the National eHealth Transition Authority's standards.

The major lesson learnt has been that through leadership at all levels, a massive change management activity can be successfully undertaken. Also, through eliminating variation in service delivery, tangible benefits can arise in financial, business, and importantly, clinical outcome areas.

### Biography

*Dr Isaac Seidl is a specialist medical administrator and general practitioner. He completed his medical degree at UWA, then undertook a variety of Army appointments across all military environments, before being appointed to Qld Health as Deputy Executive Director Medical Services, Townsville Health Service. He returned to the Australian Regular Army in 2012 and holds the rank of Colonel. Dr Seidl's academic interests include crisis leadership, clinical governance and ethics. He is Adjunct Associate Professor in Public Health at James Cook University. Dr Seidl lives in Canberra, Australia with his wife and two children.*

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### Neck Pain In Fighter Pilots - Have we Identified the Risk Factors?

**James Wallace**<sup>1</sup>, Dr Aoife McGarvey<sup>2,3</sup>

1 *Aspen Medical - Williamtown RAAF Base, Williamtown, Australia*

2 *The University of Newcastle, Newcastle, Australia*

3 *Calvary Mater Newcastle Hospital, Newcastle, Australia*

#### Abstract

**Introduction:** Fighter pilots work in a unique environment with substantial physical and psychological demands. They are subjected to high and repetitive +Gz forces, and are required to move their necks into extreme positions while supporting the additional weight of a helmet and helmet mounted equipment. Such requirements have been linked with the higher prevalence of neck pain in this population, which not only impacts on pilot health, but causes considerable detriment to operational capability and carries substantial financial cost. This systematic review collates and synthesises the results of previous studies that have investigated potential risk factors for developing neck pain amongst fighter pilots, which will aid in directing future research and preventative programs.

**Methods:** Scopus, Web of Science, Medline, SPORTDiscus and CINAHL databases were searched in October 2015, using the maximum date ranges. Eligible studies were limited to those using an epidemiological study design, and compared a population of fighter pilots who experienced neck pain in a specified period compared with those who had not. Studies were ranked according to the National Health and Medical Research Council hierarchy of evidence, and appraised for quality using the McMaster Critical Review Form for Quantitative Studies. Data extracted included: participant characteristics, time frames of analyses, definitions of neck pain used, neck pain prevalence, risk factors investigated, outcome measures used, and study findings.

**Results:** A total of 245 studies were identified, of which 13 were eligible for the final review. Twelve studies were of cross sectional design (Level IV evidence) and one was of case control design (Level III-3 evidence). Methodological rigour was generally poor, ranging from 3-11/15 (mean 6.5/15). Common methodological limitations included: recall and sampling biases, insufficient justification of sample size, failure to report validity & reliability of outcome measures, and inadequate reporting of clinical importance of results. Risk factors investigated included: demographics, physical measures of individual pilots, flight related factors, and work

related demands (physical and psychological). A number of statistically significant associations were identified, however, inconsistent results and heterogeneity of studies limited firm conclusions being drawn.

**Discussion:** Despite a number of studies investigating potential risk factors associated with neck pain amongst fighter pilots, poor methodology, significant heterogeneity, and a lack of consensus impedes the ability to draw firm conclusions. High quality prospective studies are required before we can implement evidence based prevention programs that are targeted at reducing the prevalent and costly issue of neck pain amongst fighter pilots.

#### Biography

*James has worked as a Physiotherapist for the past 8 years, working with Aspen Medical in Australian Defence settings for the past 4 years. For the past 3 years he has worked at RAAF Base Williamtown where he has developed a strong interest in neck pain in Fighter Pilots. He has three degrees, including a Bachelor of Human Movement majoring in Exercise Science and Rehabilitation, a Master of Physiotherapy, and a double Masters degree in Musculoskeletal and Sports Physiotherapy. He is one of only 0.4% of Australian Physiotherapists to be titled as both a Sports Physiotherapist and a Musculoskeletal Physiotherapist.*

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### New ANZCOR Traumatic Cardiac Arrest Guidelines: Building on Military Experience

**COL Michael Reade**<sup>1,2</sup>

1 *Joint Health Command, Canberra, Australia*

2 *2nd General Health Battalion, Enoggera, Australia*

#### Abstract

In April 2016 the Australian and New Zealand Council on Resuscitation published its first guideline on the management of traumatic cardiac arrest.(1) Several priorities differ from those of conventional resuscitation, building upon published and personal experience of the last 15 years of military trauma. Most importantly, attempted resuscitation, except when injuries are clearly incompatible with life, is

not futile. Neurologically-intact survival in a military context was 21% (2), and in selected civilians 5.1-7.5% (1).

The first peri-arrest priority is to stop the bleeding with a tourniquet or direct pressure +/- a haemostatic dressing. Airway and cervical spine are managed conventionally. Peripheral IV cannulation may be impossible, necessitating intraosseous or central venous access. The subclavian is the preferred route for a central venous catheter, which must be short and large-bore. 20ml/kg warmed fluid should be given rapidly, ideally either a 1:1 of 1:2 mixture of plasma : red blood cells. If blood products are unavailable, crystalloid (and coagulopathy) is better than nothing (and death). The target systolic blood pressure guiding fluid resuscitation should be 90mmHg (110mmHg in head injury) for the first hour, then as required to ensure the lactate falls. Patients in cardiac arrest with chest trauma who are not responding to airway and fluid should have their chest decompressed. Finger (not needle) thoracostomy is preferred. Pericardial tamponade due to trauma is usually due to a penetrating myocardial wound, requiring surgical thoracotomy. Needle pericardiocentesis is almost never appropriate. If all else fails, resuscitative thoracotomy can release tension pneumothorax or tamponade; allow control of intrathoracic haemorrhage; allow cross-clamping the descending aorta; and permit open cardiac compression and defibrillation. Cardiac arrest due to penetrating trauma is more likely than blunt trauma to respond. A favourable outcome is rarely possible if resuscitative thoracotomy is initiated more than 10 minutes after the onset of cardiac arrest.

In cardiac arrest due to trauma, all of the interventions addressing underlying causes take priority over chest compressions, defibrillation and adrenaline. First-aiders and clinicians lacking necessary equipment should prioritise calling for skilled help over attempting basic life support. External chest compressions may exacerbate haemorrhage and cardiac tamponade, and positive pressure ventilation may further reduce critically low venous return. Therefore, external chest compressions should be a secondary priority after correcting reversible causes. Evidence supporting adrenaline is weak. If used, it should follow fixing reversible causes. Only 7.5% of patients in traumatic cardiac arrest are initially found in VF or VT. Therefore, defibrillation is not the priority for the majority. Patients should only be transported to hospital after return of spontaneous circulation, unless the hospital is so close that an emergency thoracotomy could occur within 10 minutes. Resuscitation (including external cardiac compressions) should continue for up to 10

minutes after potentially reversible causes have been addressed.

### Biography

*Colonel Reade is an anaesthetist and intensivist with a Doctorate in applied molecular biology from Oxford and a Masters in clinical trials from the University of Pittsburgh. In 2011 he was appointed the inaugural Defence Professor of Military Medicine and Surgery, and in 2015 the Director of Clinical Services of the 2nd General Health Battalion. He has deployed eight times, including in 2015 as the first Director of Clinical Services of an ADF R2E deployed on warlike operations. In 2016 he undertook a detailed audit of this hospital. His research focuses on traumatic coagulopathy and trauma systems design.*

### References

1. Australian and New Zealand Council on Resuscitation. Guideline 11.10.1: Management of Cardiac Arrest due to Trauma. Melbourne, Australian Resuscitation Council, 2016.
2. Morrison JJ, Poon HP, Rasmussen TE, et al. Resuscitative thoracotomy following wartime injury. *J Trauma Acute Care Surgery*. 2013; 74: 825-829.

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## New Zealand Medical Services at the Battle of the Somme - 1916

### Dr Peter Hurly<sup>1</sup>

*1 Royal New Zealand Air Force, Bunnythorpe, Palmerston North, New Zealand*

### Abstract

It is 100 years since the Battle of the Somme. It was the largest Battle on the Western Front and lasted from 1 July 1916 to 18 November 1916. At the conclusion, more than a million men were wounded or killed for very little outcome - making it one of the bloodiest battles in history. Military thinking had not kept pace with the technological advances in warfare and the destructive power of the newer weapons was not appreciated.

New Zealand was a small nation, but her contribution to the war was significant and 15,000 men went into action at the Battle of the Somme with 8,000 being

wounded and over 2,000 killed. To support this number, New Zealand fielded a creditable Medical Service with some interesting innovations including a school of chiropody. NZMC personnel had to deal with a large number of situations for which they were unprepared and took a number of casualties themselves including the death of two medical officers in one day.

This presentation gives brief overview of the services, casualties and conditions. It poses the question as to how well modern medical services, with better equipment and training would have dealt with such numbers of patients.

### Biography

*Dr Hurly trained initially as a pharmacist, then as a medical practitioner. He worked in Emergency Medicine and general practice in South Africa before emigrating to New Zealand, where he worked in rural practice and then in general practice. Dr Hurly trained in Aviation medicine and has a Master degree in Aviation Medicine, as well as being a Fellow of the Royal New Zealand College of General Practitioners and a Foundation Fellow of the Australasian College of Aerospace Medicine.*

*Dr Hurly served in the South African Defence Force and then in the RNZAMC and later in the RNZAF, retired in 2013 having been the Director of Air Force Medicine for 8 years. Currently working as a Senior Medical Officer in the RNZAF and RNZAF Head of Delegation for Air Space Interoperability Council in the Air Space Medicine Group Interested in Military History and has completed several university papers on Military History.*

## Optimising Mental Health And Quality of Life for Australia's Military Personnel and Veterans With PTSD: Establishing a Randomised Controlled Trial

**Professor David Forbes**<sup>1,2</sup>, Associate Professor Meaghan O'Donnell<sup>1,2</sup>, Scientia Professor Richard Bryant<sup>3</sup>, Dr Stephanie Hodson<sup>4</sup>, David Morton<sup>5</sup>, Professor Malcolm Battersby<sup>6</sup>, Professor Andrew Forbes<sup>7</sup>, Dr Lisa Dell<sup>1,2</sup>, Dr Tracey Varker<sup>1,2</sup>

1 Phoenix Australia, Carlton, Australia

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3 School of Psychology, University of New South Wales, Sydney, Australia

4 Department of Veterans Affairs, Canberra, Australia

5 Department of Defence, Canberra, Australia

6 Flinders Human Behaviour and Health Research Unit, Flinders University, Adelaide, Australia

7 Department of Epidemiology and Preventive Medicine, Monash University, The Alfred Centre, Australia

### Abstract

This presentation will report on the development of a multisite randomised controlled trial of intensive prolonged exposure (IPE) and standard prolonged exposure (SPE) for military personnel and veterans. In this trial participants will be randomly assigned to receive either IPE or SPE. The IPE intervention comprises 10 sessions delivered daily across 10 working days, while the standard prolonged exposure intervention comprises 10 weekly sessions delivered across 10 weeks. The trial will examine whether the intensive approach is as effective as the 10-week model. Approximately 200 participants who are both serving military personnel and veterans, who have been identified as having symptoms consistent with PTSD will be involved in the trial. The trial will involve the development of a treatment protocol, training a small group of therapists (n=12), delivery of the intervention at multiple locations in a number of states (Victoria, New South Wales and Queensland). Expert clinical supervision will be provided, and participant outcomes will be assessed pre-treatment, post-treatment and at 12 month follow-up. The trial represents a significant partnership between the Department of Veterans' Affairs, the Australian Defence Force, the Veterans' and Veteran's Families Counselling Service, and Phoenix Australia, with the trial awarded a National Health and Medical Research Council grant to fund it.

### Biography

*David Forbes, Director of Phoenix Australia – Centre for Posttraumatic Mental Health and Professor, Department of Psychiatry, University of Melbourne.*

*He has over twenty years' experience in the assessment and treatment of mental health problems in trauma survivors, with a speciality in military and veteran mental health. He led the development of the inaugural 2007 Australian Guidelines for the Treatment of PTSD and the revision published in 2013 approved by the NHMRC and endorsed by the key health professional colleges.*

*He is also the Vice Chair of the international PTSD Guidelines Committee developed by the International Society for Traumatic Stress Studies (ISTSS).*

*He has published over 120 scientific papers in the international literature and sits on many Commonwealth government veteran and military policy and scientific advisory panels and academic journal editorial boards.*

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## Optimising Performance Through Incorporation of Biofeedback Into Reality-Based Training

**MAJ Kane Pfingst**<sup>1</sup>, LTCOL Laura Sinclair<sup>1</sup>, SGT Mitch Wyatt<sup>1</sup>, CPL Audrey-Rose McLean<sup>1</sup>, CPL Sally Toogood<sup>1</sup>, CPL Michael Vickers<sup>1</sup>

*1 1st Psychology Unit*

### Abstract

Reality-based training can be defined as any type of simulation training that prepares individuals for future performances through experiential learning. Military and emergency services are increasingly turning to technology based immersive training to simulate and prepare for complex and potentially dangerous operations. The 1st Psychology Unit are trialling the incorporation of biofeedback systems into simulation training to monitor the impact of psychological stress. Biofeedback involves individuals being connected to sensor devices that provide information on psycho-physiological response to an event e.g. training. Feedback can be provided immediately for an individual's awareness or at a later time for analysis by training staff.

These techniques are considered a 'tool' to enhance the effects of resilience training and optimise human performance. It is argued that technology based 'tools' do not replace the necessity for well-constructed training programs. We discuss findings from our systematic trial to demonstrate social return on investment in innovation.

### Biography

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## Pathways to Mental Health Care in The ADF and The Hidden Unmet Need

Dr Russell Reid, **Helen Benassi**<sup>1</sup>

*1Department Of Defence, Canberra, Australia*

### Abstract

It is estimated that more than half of the ADF (54.1%) have experienced a mental disorder during their lifetime and almost one quarter (22.0%) have experienced a mental disorder in the previous twelve months. However, a large proportion of ADF members with a current disorder may not be receiving treatment. Almost half of those with PTSD (48.9%) and more than four fifths (85.2%) of those with any alcohol disorder report having not received professional treatment in the previous twelve months. On average ADF members delay treatment seeking from between four years for depressive episodes to seven years for alcohol abuse. This provides an opportunity for conditions to develop and increases the likelihood of resistance to treatment.

The ADF encounter a number of barriers in encouraging help-seeking for mental health care by ADF members. Although many of the barriers to care in the military are also seen in the civilian population, many may be amplified by the military context, and others are specific to military organisations. The presentation will attempt to describe different types of stigma and the factors contributing to mental health stigma, and the barriers to treatment both in a community and ADF context. The presentation will touch on some of the strategies used by the ADF and those used by the United States and Canadian forces

to address these issues as well as the important role of primary health care providers.

### Biography

*Ms Helen Benassi is currently the Assistant Director Mental Health Research and Evaluation within Joint Health Command. Ms Benassi joined the Department of Defence in 2005, and has since worked across many research disciplines including mental health screening and surveillance, unit climate, epidemiology and personnel selection. She is currently an investigator on the Transition and Wellbeing Research Programme and the Longitudinal ADF Study Evaluating Resilience. Ms Benassi completed a psychology internship with Defence, registering as a psychologist in 2010.*

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## Peak Performance: The Missing Piece

**MAJ Andrew Moss<sup>1</sup>**

*11st Psychology Unit*

### Abstract

Traditionally there have been three steps to achieving realism in training: establishing exactly what needs to be simulated; identifying the individual skills required and the level of stress that needs to be simulated and then configuring these training needs into a training continuum, and; finally, controlling and gradually increasing the level of stress over the training continuum in a stepwise fashion. One area has been overlooked for too long, however, is the importance of learning and integrating problem solving and internal coping strategies with the other fundamental skills. This missing piece represents a significant opportunity for improvement to human capability in Defence.

The tools needed to exploit this opportunity already exist – programs like BattleSMART (Self Management and Resilience Training), for example, and the High Res mobile phone app. However at present BattleSMART is treated like an immunisation schedule with the presumption being that if you do the training then that alone provides the desired protection or enhancement. But this could not be further from the truth. Indeed, if the model and skills taught in BattleSMART are not practiced and reinforced on a regular basis within a unit,

no significant benefit from the training should be expected.

Undoubtedly the physical and cognitive domains of BattleSMART are of most importance to peak performance and the 1st Psychology Unit has started to develop tools and programs to further enhance both these domains. This includes trialling the use of biofeedback equipment and developing mental fitness training. The 1st Psychology Unit is also available to provide guidance to Commanders on how to integrate these skills in to their training continuum.

Ultimately, Defence investment in Reality-Based Training will continue to yield sub-optimal results until such time as units start to prioritise the development of a "BattleSMART culture". At the end of the day reality is important, but cognitive agility, flexibility and coping strategies are vital.

### Biography

*Major Moss joined the Australian Army in 2002. Since his promotion to Major in 2009 he has commanded the Mental Health and Psychology Section at Kapooka, managed Operational Mental Health programs within Joint Health Command at the national level, including Defence's BattleSMART (Self Management and Resilience Training) program, worked within Army Headquarters as the Mental Health staff officer with the Directorate of Army Health, and he was the first Army Psychologist within the Sexual Misconduct Prevention and Response Office. For the past two years he has been posted to the 1st Psychology Unit where he has worked as the OIC Sydney Detachment and more recently as the unit's Operations Officer. Major Moss deployed on OP HIGHROAD in July 2015 where he led a psychology Force Extraction Team that deployed to Afghanistan and he also deployed on OP ACCORDION in October 2015 where he was the Senior Psychologist for the Middle East Region. Major Moss was awarded an Australia Day Medallion in 2013 for his research, development, and national management of the BattleSMART program. He was also a significant contributor over a three year period in a joint DVA/Defence project to develop the recently released 'High Res' mobile phone app.*

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### Persistence of the Dunning-Kruger Effect in Frontline Management Training

**MAJ Sarah Watson<sup>1</sup>**, Prof EJ Kehoe<sup>2</sup>

*11st Psychology Unit, 2University of NSW*

#### Abstract

The less skilled amongst us frequently overestimate our capabilities, which is often labelled as the Dunning-Kruger effect. Also identified as the 'unskilled and unaware problem' (UUP), research conducted to date has produced mixed results as to whether this effect can be overcome by individuals following an opportunity for training or receiving performance feedback. Participant-reported confidence and ease of learning, in addition to the provision of standardised training and feedback on multiple occasions may assist the

more unskilled amongst us to be more accurate in predicting our performance. To test the aggregate effect of these factors, this study involved within-subject analysis of participant (N = 732) reports and performance collected over the course of a three-month standardised training program. Results identified the Dunning-Kruger effect: (1) at the commencement of training amongst the highest and lowest performing participants, and (2) at the completion of training amongst the lowest performing participants only. The Dunning-Kruger effect not only appeared resistant to reported task ease, but participants' confidence rose over the course of the training program despite multiple opportunities to appropriately recalibrate predicted skill with actual performance. These findings suggest that the confidence of the less skilled remains resistant to any challenges to their own abilities. Results are discussed with respect to understanding and managing individuals' reports of confidence when determining actual competence.

#### Biography

*MAJ Sarah Watson is a Senior Psychologist with the Australian Regular Army. She currently heads the Operational Performance Detachment of the 1 Psych Unit, the Army's Operational Psychology asset. Recently graduated with a Master of Psychology (Organisational) with UNSW, Sarah was awarded the APS College of Organisational Psychology NSW Section Award for highest academic results. MAJ Sarah Watson has and continues to have a long term interest in performance psychology and the capacity to develop human capability and functioning.*

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### "Post Traumatic Stress Disorder" – Clinical Presentation and Management

**Dr Richard Magtengaard<sup>1</sup>**

*1 The Marian Centre*

#### Abstract

Given Defence personnel and first responders may experience notable difficulties with the quality of their mental health and well-being, it is vital we all understand the early warning signs of psychological trauma. This talk aims to provide a broad understanding of PTSD and the downstream challenges which may occur for the individual or their family. In parallel, evidence-based treatments will be discussed with recommended pathways for receiving care and support.

#### Biography:

*Dr Richard Magtengaard is the current Director of the Military Trauma Recovery Programme at the Marian Centre. This programme is suitable for defence personnel and others professions including police officers, paramedics and any others who have endured ongoing trauma within the performance of their daily routines. Dr Magtengaard served as a Commissioned Officer within the Royal Australian Navy before going on to practice medicine. He remains committed to the mental health and general well-being of Defence personnel alongside first responders and their families.*

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### Psychosocial Stressors of Deployment for NZDF Personnel

**FLTLT Carsten Grimm<sup>1</sup>**

*1 Royal New Zealand Air Force, Christchurch, New Zealand*

#### Abstract

Serviceperson wellbeing and mission success depends on the resilience and coping strategies of those deployed. Understanding deployment stressors allows for the identification of appropriate mitigation

strategies. This study sought to understand the most commonly experienced psychosocial stressors that NZDF service personnel report on their return from deployment.

Psychosocial stressors refer to non-combat stressors that come from prolonged exposure to being on deployment, such as separation from family, difficult working conditions, ongoing high workloads or chronic boredom. The prolonged and prevalent nature of psychosocial stressors may have more opportunity to cause psychological harm than the traumatic stressors of specific critical incidents and other combat related stressors.

Mental health and deployment experience screens of 631 service members were analysed from the period Feb 2014 – Nov 2015. The top five stressors rated as moderate-to-extreme by the largest proportion of returning service members were; overload of work (40%), being away from family and friends (38.9%), frustration with HQ in NZ (32.9%), sorting out problems at home (31.1%), and frustrations generally (30.6%).

A high proportion of NZDF service members met the ADF cut-offs for risky drinking behaviour (35%) and psychological distress (13.8%). Fewer NZDF personnel met the ADF cut-off for PTSD symptomology (6.9%). The most frequently experienced potentially traumatic event (PTE) “witnessing extreme poverty, starvation, malnutrition” was experienced by 21.6% of those deployed.

Significant correlations were found between the experience of deployment stressors and; psychological distress, PTSD symptomology, and anticipated adjustment difficulties when returning home. Satisfaction with direct leadership and senior leadership were both significantly correlated with higher morale and less deployment stress. Direct leadership had the strongest relationship with morale of any potential stressor for NZDF deployed personnel. A higher proportion of Māori, Pacifica, and female service personnel scored in the elevated ranges on measures of psychological distress, PTSD symptomology, and risky drinking behaviour.

Based on these findings it was recommended that service personnel are made more aware of the potential harm of psychosocial stressors during pre-deployment training. Deployment environmental and physical discomforts appear to be better anticipated by military personnel. Psychosocial stressors tend to be less anticipated and subsequently can be more intense and central in focus while deployed. Further investment in psychosocial stressor awareness training during PDT may inoculate against these poor outcomes. NZDF Māori, Pacifica, and female service

members experience worse outcomes on return from deployment than male and majority ethnic group members. Specific mitigation strategies for these at-risk service members are necessary.

### Biography

*Carsten served as a helicopter pilot with the RNZAF from 1997-2010 before retraining as a psychologist. He has deployed to Timor Leste, The Solomon Islands and Afghanistan. His areas of interest include resilience building, high performance teams and sports psychology.*

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## Quality Assurance Audit of the Mental Health of RAAF Personnel Engaged in Airborne Intelligence, Surveillance and Reconnaissance (ISR) Operations 2013-14

LTCOL Jacqueline Costello<sup>1</sup>, Dr Duncan Wallace<sup>1</sup>

*1 ADF Centre For Mental Health, Mosman*

### Abstract

Arising from concerns reported by the RAAF Air Commander that there was an increased number of personnel presenting with mental health issues arising from RAAF airborne Intelligence, Surveillance and Reconnaissance (ISR) operations in 2013-14, the ADF Centre for Mental Health was tasked to conduct a Quality Assurance Activity of the mental health of personnel serving in 92 WG units.

This presentation describes the conduct of the audit and its findings.

The audit included a literature review, stakeholder engagement and review of available health data.

Definitive conclusions as to whether there had been a larger than expected number of personnel presenting with mental disorders or mental health problems in 2013 and 2014 could not be drawn from the available mental health data on personnel from 92WG, 5FLT and HERON Rotation members. Prevalence rates for mental disorder in 92WG were found to approximate what would be expected as a broad indicator of the general mental health of the ADF. Direct discussions



with the key mental health stakeholders revealed there was no trend of increased mental health presentations identified among any RAAF personnel during the period in question.

The Mental Health Quality Assurance Audit identified a range of opportunities for Air Force to implement change. Recommendations were made in terms of immediate, short term and long term time frames across a spectrum of mental health outcomes, resilience building initiatives, cultural change and support to command both in an operational and garrison setting.

### 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 extensive operational experience as a Medical Officer in the Navy Reserve. He has deployed on Active Service to East Timor, Iraq, Afghanistan and the Persian Gulf. He has also deployed on OP RELEX I to Christmas Island and Ashmore Reef, as well as humanitarian assistance operations in Banda Aceh and Nias.*

*Dr Wallace was appointed to his current position as psychiatrist to the Australian Defence Force Centre for Mental Health, at HMAS PENGUIN, Sydney, in 2010. He is also a Visiting Medical Officer at St John of God Hospital, North Richmond.*

*He is a Commodore in the RANR and was Director-General Naval Health Reserves from 2012 to 15.*

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## Quality Improvements to Complaints and Clinical Incident Management related to ADF Contracted Health Services

**Madeline Makeham<sup>1</sup>, Alexandra O'Farrell<sup>2</sup>**

<sup>1</sup> Garrison Health Operations, Canberra, Australia

<sup>2</sup> Medibank Health Solutions, Sydney, Australia

### Abstract

1. The ADF Health Services (ADFHS) contract has been fully implemented in Defence since Nov

2012. Through a collaborative approach by the Commonwealth (Joint Health Command) and the prime contractor for the ADFHS contract, Medibank Health Solutions (MHS), Defence has improved oversight and ability to manage Healthcare Complaints and Clinical Incidents (HCCI) related to contracted health services.

2. Clinical Governance over the ADFHS delivery has been challenging. Through the implementation of innovative management systems, the clinical and organisational risk associated with adverse clinical events has been reduced. The following achievements are testament to the success of the systems implemented:

- e. development of secure processes and policies that govern Garrison Health Operations (GHO) HCCI Management
- f. regular review, analysis and reporting of incidents providing data and information of local and national relevance
- g. process for CCIM Management now embedded in GHO Joint Health Units (JHUs) ensuring regular review, analysis, reporting and closure of HCCI relating the healthcare provided by GHO.

3. Through ongoing commitment to Quality Improvement, and reference to best practice GHO and MHS have embedded effective policies, processes and forums to review and manage HCCI. A routine review of the extant processes and policy in 2015 resulted in a suite of system improvements in 2016 as follows:

- a. changes to terminology when finalising HCCI of 'unsubstantiated', 'inconclusive' and 'substantiated' to 'No further action required' and 'Improvement opportunity identified'
- b. agreed definition for HCCI that require 'Noting only' – these are HCCI which have been managed and require no further intervention
- c. agreed process for documenting HCCI pending further information to complete management, including informing members of any delay and actions taken to rectify
- d. processes to identify and agree when collaborative investigations are required. Process includes documentation of task allocation and standardised templates
- e. improved training of investigators
- f. improved timeliness and escalation of HCCI through implementation of process maps and
- g. amended HCCI Meeting Terms of Reference to reflect the changes.

### Biography

*Madeline Makeham is a Registered Nurse who works in the Garrison Health Directorate of Operational Clinical Governance. Madeline has worked in Garrison Health for over five years and has been an integral part of the team involved with working to deliver Health Services to ADF members through the current ADF Health Services contract.*

*Madeline has keen interest in the Safety and Quality of health care provided to ADF members and has been involved in some key quality improvement projects such as the ADF Clinical Handover Improvement Project and the ADF Sterilising Capability Improvement Project. Madeline has also contributed to the development of a health care complaints and clinical incident management system with Garrison Health.*

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## Resilience Through a Positive Model of Self Reflection, Adversity and Mental Fitness

**Dr Monique Crane<sup>1</sup>, LTCOL Laura Sinclair<sup>2</sup>, CAPT Danny Boga<sup>3</sup>, LTCOL Pip Weiland<sup>4</sup>**

*1 Macquarie University*

*2 1st Psychology Unit*

*3 1st Psychology Unit*

*4 Headquarters Forces Command*

### Abstract

The military is an organisation in which personnel are selected, trained and prepared to face situations of risk, challenge, danger, complexity and adversity. Organisational focus on strengthening resilience skills early during the professional development of military personnel prepares them for exposure to future uncertainties, and may prevent negative outcomes following deployment. A preventative program rather than one based on a more traditional disease based philosophy is rapidly becoming world best practice (Casey, 2011), and is the approach adopted by FORCOMD.

The Mental Fitness model has been designed to enhance resilience in accordance with the FORCOMD Resilience Plan. The model provides a training

program based off current resilience research, whilst offering a systematic training design which can be integrated easily into existing training.

Mental fitness is about being able to meet the changing demands of the environment and situation. Approaches which work very well in some situations can create unnecessary problems or reduce efficiency in others. Mental fitness requires a desire to continually learn, adapt and improve individual responses based on the demands of the situation.

Recently work has been done to define what is meant by mental fitness and to identify the key principles which distinguish it from other outcomes, such as mental health (Robinson, Oades, Lindsay & Caputi, 2015). One of the key aspects of mental fitness which makes it ideal for incorporating into a military training framework is it can be conceptualised as an individual's capacity to sustain performance and recover quickly, which reflects resilience; however, mental fitness also involves the ability to identify and seize opportunities to gain advantages as they occur, which reflects measurable training outcomes within Defence. An approach to using stressor experiences as opportunities for growth and development has been developed by Macquarie University (Crane & Boga, in press). This approach uses systematic self-reflection as a way on enhancing resilience and mental fitness as a consequence of exposure to adversity.

A partnership between 1st Psychology Unit and Macquarie University formulates the first opportunity to examine if the efficacy of systematic coping reflection allows for increasing mental fitness in response to stressor exposure in the military setting. This comes off the back of pilot work conducted by Crane in university post-graduates. Systematic coping reflection can be integrated into leadership training and current Army practices such as post-activity assessments. Moreover, it can be implemented by unit leadership reducing the need for psychology personnel for its administration. This research highlights the model as the first to propose and evaluate a mechanism for a positive relationship between adversity and mental fitness.

### Biography

*LTCOL Laura Sinclair is the Commanding Officer of 1st Psychology Unit - the operational Army psychology unit within Forces Command. LTCOL Laura Sinclair is a psychologist, Monash University Masters graduate and has a broad range of Army experience ranging from aviation human factors through to command and control of health facilities. Her operational experience is extensive with twelve operational tours that have*

taken her to the Solomon Islands, Iraq, Afghanistan and Antarctica. She is the recipient of the Conspicuous Service Cross (CSC) for command and leadership of Joint Health Unit North Queensland.

### Reference

Casey, G.W. (2011). Comprehensive Soldier Fitness. A Vision for Psychological Resilience in the U.S. Army. *American Psychologist*, 66(1), 1–3.

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## Role 2 Health Service Support in the New Zealand Defence Force, from 1997 to 2016

**MAJ Soren Hall<sup>1</sup>**

<sup>1</sup> *New Zealand Defence Force, Upper Hutt, New Zealand*

### Abstract

The first part of this presentation will provide a brief history of the Role 2 (Land) since the end of the Relocatable Field Surgical Containers in 1997 through to the present day.

The second half of this presentation, will walk through Capability Branch's process to delivering a world class Role 2 facility. The key to delivering any capability is having, the right people at the right place at the right time.

### Biography

#### *Military History*

- *Enlisted in 1992 into the Royal New Zealand Dental Corp as a Dental Assistant.*
- *Major Hall, trade changed to Medic in 1995 and was posted to the Forward Surgical Team (FST).*
- *In 1997 Major Hall deployed to Bougainville as part of the Role 1. He was also employed in the Australian Role 2 in the Operating Theatre and Resus areas.*

- *In 1999 Major Hall deployed to East Timor with the FST.*
- *On his return he was posted to the Forward Support Section as the platoon Sergeant.*
- *Major Hall conducted fulltime study between 2001-2003 graduating with a Bachelor of Applied Science in Medical Imaging Technology.*
- *In 2007 Major Hall deployed to Timor Leste as an Environmental Health Technician.*
- *In 2008 Major Hall deployed to Afghanistan to the Role 3 Multinational Medical Unit at Kandahar Airfield as a Radiographer.*
- *In 2009 Major Hall assumed the role of, Office in Charge of the FST.*
- *Major Hall was posted in 2013 to his current role within Capability Branch, NZDF.*

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## Royal Australian Army Nursing Corps Employment Model Development – A Proposal

**LTCOL Christine Saunders**

<sup>1</sup> *S01 Health Governance and Policy*

### Abstract

The role of the Army Nursing Officer should change and adapt as the provision of healthcare responds to significant challenges across the spectrum of military activity, including support to operations, the increasing prevalence and incidence of complex health requirements for Army's WII and advancing technology changing delivery of healthcare. The RAANC Modernisation Proposal presents options to rebuild access to professional nursing mastery in balance with the professional mastery required of a military officer postured to meet preparedness requirements through the provision of a skilled, experienced and professionally satisfied nursing workforce that will continue to evolve and change.

The Director of Army Health (DAH) and RAANC HOC are developing nursing officer employment model options that will enhance the clinical role of nursing officers, improve their workforce experience and retain their skills within Army. This work develops the outcomes of a Nursing Forum held in Canberra in November 2015. DAH has consulted widely within Army, Joint Health Command, Navy and Air Force.

### Biography

*Lieutenant Colonel Saunders has enjoyed a diverse military career since enlisting into the Army Reserves in 1988, subsequently commissioning as a Transport*

*Officer in 1997 and transferring to the Australian Regular Army as a Nursing Officer in 2000.*

*Lieutenant Colonel Saunders has considerable command and leadership experience. She has also served in a range of staff appointments. Lieutenant Colonel Saunders clinical experience includes 11 years of civilian nursing culminating as a Clinical Nurse Specialist in Midwifery prior to joining the ARA. Military clinical experience in resuscitation, Primary Health Care, Aviation and Aeromedical Evacuation nursing achieved by multiple field and garrison postings with strong clinical focus and deployments as a clinician on Operation TANAGER, Operation BEL ISI II, Operation ANODE and Operation PAKISTAN ASSIST II. Lieutenant Colonel Saunders has completed a Diploma of Health Science (Nursing), a Bachelor of Nursing, a Graduate Certificate in Remote Health (Nursing) and has a Master of Nursing (Advanced Clinical Education).*

*Lieutenant Colonel Saunders is dedicated to the provision of high quality health care by Army health professionals during exercises and missions within the joint, Whole of Government, coalition and international environments. She is also passionate about enabling an enduring contribution to Army and the broader ADF health capability through supporting the continual development and mentoring of nurses and the unique role and capability that nursing provides.*

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### Shock Trauma: Bringing Surgery to the Fight

LT Shane Balcombe, LT Emma Kadziolka

#### Abstract

Despite considerable advances within our Land Based Trauma System, we are still seeing survivable injuries occur on the battlefield and incurring preventable deaths. Army has developed and continues to improve health capability within both the pre-hospital and hospital domains; however a capability gap exists within this progressive resuscitation pathway.

The 2nd General Health Battalion has developed a Role Two Light Manoeuvre (R2LM) capability which fills the pre-hospital to hospital gap. Shock Trauma is a capability within the progressive resuscitation pathway that brings damage control resuscitation and damage control surgery to the fight.

Shock Trauma ensures specialist led damage control resuscitation and life saving surgery within life and

limb saving timelines. It is a highly mobile and tactically viable capability that is able to adapt and be fully operational within 90 minutes, and can be employed in and deployed to many environments, whether it is for an amphibious mission, short opportune offensive or initial medical footprint.

#### Biography

*Lieutenant Shane Balcombe enlisted into the ARA as a Medical Assistant in November 2000. During his time as a Medic, Lieutenant Balcombe worked in many ADF medic roles, including on operational service as an evacuation medic on Operation Anode, Solomon Is 2003, as resuscitation and patrolling company medic on Operation Catalyst, Iraq 2005. Lieutenant Balcombe held the position of RAP SGT 21 Const Sqn when he was accepted onto the ADF Nursing undergraduate programme.*

*In 2012, Lieutenant Balcombe graduated with distinction from the Queensland University of Technology and started his postgraduate placement at the Tweed Heads Hospital in their Cardiac and Emergency departments. On completion of his placement in 2014, LT Balcombe re-entered the army workforce as a NO and has been subsequently posted to the Special Operations Engineer Regiment and now the 2nd General Health Battalion.*

*Lieutenant Balcombe is currently posted to the Shock Trauma Platoon, 2nd General Health Battalion. He is dedicated to the formation of the Role 2 Light Manoeuvre, concentrating on its damage control resuscitation capability.*

*Lieutenant Emma Kadziolka graduated with a Bachelor of Nursing (Fast-Track) from The University of Tasmania at the beginning of 2010 and obtained a graduate position with Calvary Healthcare Tasmania. She completed a rotation in both the acute Surgical Unit and Perioperative environment (including scrub/scout, anaesthetics and recovery). She continued to work in both areas completing a Graduate Certificate of Nursing (Perioperative).*

*In 2013, Lieutenant Kadziolka enlisted into the ARA as a Nursing Officer and was posted to the 8th Close Health Company, 1st Close Health Battalion. During her time there she provided Role 1 health care as the Resuscitation Nursing Officer in support of 1st Brigade exercises, Special Air Service Regiment and US Marine Corps joint operations. Lieutenant Kadziolka also completed her Graduate Diploma Nursing (Perioperative) and a Graduate Certificate in Nursing Education.*

*In 2015, Lieutenant Kadziolka posted to the 2nd General Health Battalion, Operating Theatre*

*Department and deployed in April 2015 on OPERATION OKRA as the Department 2IC.*

*Lieutenant Kadziolka is currently posted to the Shock Trauma Platoon, Role 2 Light Manoeuvre, 2nd General Health Battalion. She is focused on developing the Light Surgical Team.*

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### Sleep Factors Underpinning Nightmares of PTSD: An Ambulatory PSG Study

**Dr Andrea Phelps**<sup>1</sup>, Professor Richard Kanaan<sup>2</sup>, Dr Christopher Worsnop<sup>2</sup>, Dr Suzy Redston<sup>2</sup>, Professor David Forbes<sup>1</sup>

*1 Phoenix Australia - Centre for Posttraumatic Mental Health, University of Melbourne, Carlton, Australia,*

*2 Austin Health, Heidelberg, Australia*

#### Abstract

Posttraumatic nightmares are a prevalent and highly distressing symptom of PTSD, which often persist following treatment for PTSD, highlighting the need for targeted treatment. However this requires improved understanding of the nature of posttraumatic nightmares. Previous sleep studies with veterans internationally have been plagued with the problem that veterans tend not to have their nightmares when in the sleep laboratory. In this study we sought to overcome this problem by using ambulatory sleep monitoring equipment that could be used in veterans' own homes or during admission to a psychiatric inpatient unit.

The aim of the study was to investigate the sleep of veterans who experience posttraumatic nightmares to determine the stage of sleep in which nightmares occur and their relationship with co-morbid sleep disorders, such as obstructive sleep apnea (OSA). Veterans and current serving personnel were recruited from the Psychological Trauma and Recovery Service (PTRS) at Heidelberg Repatriation Hospital. Mid-way through, the study was extended to include emergency service personnel, however these were in the minority, with just five of the total 35 participants being emergency service personnel. The study was approved by the Austin Health Ethics Committee.

All sleep studies were undertaken during an inpatient stay using ambulatory polysomnography (PSG). When a nightmare occurred during the sleep study, participants pressed an event button so that the corresponding sleep stage, proximal sleep events

and heart rate could be determined. They were also asked to write a brief description of their nightmare. The following morning they answered questions on similarity to trauma, realism, distress, vividness of images and other sensory details, and physical sensations in the dream.

Of the 35 participants, 21 experienced nightmares during their sleep study, with recalled content that could be linked to stage of sleep and associated sleep events. There were a number of genuinely new findings of international importance:

1. Posttraumatic nightmares, unlike normal dreams, occur in both REM and non-REM sleep. This indicates that we might be dealing with different types of phenomena;
2. Posttraumatic nightmares are often associated with sleep-disordered breathing. Twelve of the 21 participants who had nightmares during their sleep study, had previously undiagnosed OSA;
3. There was an unexpected relationship between nightmare content and body mass index (BMI). Participants who were of healthy weight consistently reported symbolic nightmares while those who were obese were more likely to have replay nightmares. This was not explained by obstructive sleep apnoea.

Further research is needed to confirm these findings with a larger sample and to begin to identify subtypes of posttraumatic nightmares that might respond to different treatment approaches.

#### Biography

*Dr Andrea Phelps is the Deputy Director of Phoenix Australia. She has over 20 years of clinical experience in treating posttraumatic mental health problems. Dr Phelps has led a number of major Phoenix Australia projects including the development of the Australian Guidelines for the Treatment of Acute Stress Disorder and Posttraumatic Stress Disorder (2007, 2013). Dr Phelps has consulted to a range of industry partners and government on research, service development and policy issues regarding organisational responses to psychological trauma. Industry partners include Tracksafe Foundation, state rail organisations, state police, fire and ambulance services; Government departments include Veterans' Affairs, Defence, Health and Human Services, Australian Customs and Border Protection Service, and Australian Transport Safety Bureau. Dr Phelps has also led research into innovative treatments for trauma populations, including imagery rehearsal therapy for posttraumatic nightmares. Her research into the nature of posttraumatic nightmares is intended to guide future treatments.*

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### Social Determinants of Health & Military and Veteran Communities - The Value of the Military Social Work Lens

**Karen Green**<sup>1</sup>

*1 Department of Defence, Townsville, Australia*

#### Abstract

Social work services within military and veteran populations are underpinned by specialist professional practice skills, organisational knowledge of the unique life cycle issues and associated psycho-social impacts for individuals, partners, couples, families, and communities. The social work profession intrinsically values the reciprocal relationship between a person's health and well-being, and his or her capacity to meaningfully engage within the community and society, as identified through the social determinants of health. In the USA, military social work is a highly respected profession underpinned by extensive research and a rich evidence base. Military social work is taught in universities across the USA, and as a regulated profession it is a respected, specialised field of practice with overarching national competency standards for social workers who work with military members, veterans and their families.

In contrast, Australian social workers working with military and veteran populations perform services in accordance with organisational mandates or private practice guidelines, and do not have a unified national identity. In addition, the paucity of Australian military social work research, the absence of courses offered in Australian universities, and differing opinions on the importance of supporting the campaign for national regulation

of the profession, are just some of the factors that influence how other health disciplines understand or value the contribution of social work in the military context.

A brief comparative analysis of the status of Australian and USA military social work practice, drawing on the author's 2016 Endeavour Executive Fellowship experience at New York's Fordham University, will be provided. This will be followed by an overview of how the social work lens adds value through systemic assessments and formulation of comprehensive individual and community plans that maximise health and well-being outcomes for the military and veteran community. A key value of the military social work lens is that it can ultimately contribute to positive outcomes related to the social determinants of health on micro, meso and macro levels. Strategies to better promote the value and utilisation of military social work knowledge and skills in multidisciplinary teams in Australian military and veteran contexts will also be suggested.

#### Biography

*Ms Karen Green is an accredited Australian Social Worker with over 25 years of clinical and organisational leadership experience. Her extensive work with military and veteran populations over the past 15 years has driven her passion to work toward articulating the identity of Military Social Work in Australia as a formally endorsed specialised field of practice. Ultimately, the establishment of a robust Australian Military Social Work identity will lead to the profession attaining global currency, and will ensure that Australian military and veteran communities receive services that align with the highest standards that inform international best practice in Military Social Work.*

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## Storage Duration of Platelets and Outcomes of Critically Ill Patients

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- 11 *Royal Australian Navy, Australian Defence Force, Canberra, Australia*

### Abstract

**Purpose:** The 5-7 day storage duration of liquid-stored platelets limits the Defence capability to deploy this capability on operations. In contrast to the regular supply from the US of longer shelf-life components such as packed red blood cell and plasma, US-led Role 3 hospitals in Iraq and Afghanistan had to rely on-base donors as a source of apheresis platelets. This was appropriate in hospitals with high and predictable demand, but is wasteful in contingency operations. Minimising wastage of expired platelets and having sufficient supply to meet demand are competing priorities. In civilian practice, platelet wastage due to outdating is 15-30%.

The short self-life of platelets is due to structural and functional changes, and the risk of bacterial proliferation with more prolonged storage. However, the consequences of prolonged storage on clinical patient-centred outcomes are not well understood. The purpose of this study was to determine whether the storage duration of platelets transfused to critically ill patients is associated with patient

outcomes.

**Materials and Methods:** A retrospective analysis of all critically ill patients admitted to the ICU of two tertiary hospitals in Australia who received one or more platelet transfusions between 2008 and 2014. Outcome variables were hospital mortality and ICU-acquired infection, including bacteraemia and bacteriuria. Platelet storage was characterised as maximum, minimum and median storage duration, and the storage duration of the first unit transfused. Associations between platelet storage duration and outcomes were evaluated using multiple logistic regression. Kaplan-Meier survival analysis was performed to evaluate the relationship between platelet storage duration and survival time on outcomes.

**Results:** Among 2250 patients who received one or more platelet transfusions while in ICU, the storage duration of platelets was available for 1430 (64%), with a median storage duration of 4 days (IQR 2, range 2-5). In-hospital mortality was 22.1% and ICU infection rate 7.2%. When comparing patients who received platelets of a maximum storage duration of ≤3 days, 4 days or 5 days, there were no significant differences in demographics, pre-ICU illness severity or number of transfused products. After adjusting for confounders, the storage duration of platelets was not independently associated with outcomes. Similar results were found when considering the median and minimum storage duration, the storage duration of the first unit transfused, and considering patients who received only one platelet unit.

**Conclusions:** In this large observational study in a heterogeneous ICU population, storage duration of platelets (up to 5 days) is not associated with an increased risk of mortality or infection. As platelet demand continues to rise around the world, increasing the storage duration may have the benefit of reduced wastage of platelet stocks and may offer the Defence Force the capability to have fresh platelets on deployment in certain situations. Investigating the clinical effect of more prolonged storage is therefore warranted.

### Biography

*LEUT Andrew Flint is a Medical Officer in the Royal Australian Navy currently completing his residency in the Hunter New England Health Network of NSW. Andrew is conducting a Masters by Research collaborating with the Australian and New Zealand Intensive Care Research Centre (ANZICRC) and the Centre of Research Excellence in Patient Blood Management (Blood-CRE) on the effect of storage duration of platelet transfusions on outcomes.*

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### Sustaining Military Personnel at High Altitude - An Account of an Australian Defence Force and Indian Army Collaborative Information Exchange and an Update of Altitude Illness, Prevention and Treatment

**Dr Jorian Kippax**<sup>1,2</sup>

*1 3 HSBC*

*2 Royal Hobart Hospital, Hobart, Australia*

#### Abstract

In this modern era where Australian Defence Force (ADF) personnel may be called upon at short notice to deploy to and engage enemy forces in remote mountainous regions, it is imperative that the ADF has a thorough understanding of illness patterns peculiar to very high altitude (above 3500m). This would also include risk reduction via acclimatization and acute treatment of altitude illness and cold related injuries.

It is well recognized that excessively rapid altitude gain may quickly cause incapacitation and death even in previously healthy individuals. Few military forces have more experience with deploying personnel to high altitude than the Indian Army. The Indian Army Defence Institute of High Altitude Research (DIHAR) is situated at 5300m in the mountains of the Northern Indian province of Ladakh. They have published extensively on their experience with soldiers at altitude.

In August this year an ADF team of four led by COL Brick of the Directorate of Logistics will travel to Ladakh to exchange information with the Indian Army at DIHAR. It is hoped to gain considerable useful information from their wealth of experience in this highly specialized field.

In this presentation the conduct of this task will be described including an update covering the field of high altitude medicine.

#### Biography

*Dr Jorian Kippax is an Emergency Medicine and Hyperbaric Medicine Specialist at the Royal Hobart Hospital, Tasmania.*

*In 2007 he joined the Australian Defence Force as a Reservist Medical Officer and currently carried the rank on Major. He has provided medical support on Exercise Olegata Warrior in Papua New Guinea as well as many national exercises. He has a keen interest in teaching advanced resuscitation skills and this year joined the Closex team for exercise Hammel. Recently, he had the opportunity to join a small team led by COL Brick (DLOG-A) to Ladakh, India, on a Subject Matter Expert Exchange (SMEE) investigating the Indian Army's logistic and health arrangements at high altitude.*

*Dr Kippax professional interests include aeromedical, disaster response and environmental medicine with a focus on altitude-related medicine. He lectures on these topics for the University of Tasmania and other professional groups including Tasmanian Police. Dr Kippax is a keen mountaineer and has made first ascents of a number of peaks over 6800m throughout the world while providing expedition medical support. In 2009 he was co-awarded New Zealand Mountaineer of the Year for his lifetime mountaineering achievements and during the same year his short film titled "the Lost Spire" was awarded first prize at the New Zealand Mountain Film Festival and received acclaim at the Banff Mountain Film Festival.*

*Dr Kippax is actively involved with international disaster response through the Australian Medical Assistance Team (AusMAT) and in 2013 he deployed to Tacloban in the Philippines immediately following Cyclone Yolanda capacity Clinical Team Leader and Second-in-Charge. He is actively involved with National Critical Care Trauma Response Centre (NCCTRC) team leadership training.*

*Major Kippax is married to a long-suffering Midwife, Ms Leah Avery and together they have a 4 year old daughter, Sophie who seems to enjoy rock-climbing and has crossed Southern Pacific Ocean in a yacht thus becoming the youngest visitor to the remote Island of Pitcairn. They are expecting their second child at the end of this year.*

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### Targeted Musculoskeletal Pre-Conditioning for Recruit Training: Early Findings of the PREFIT Study

**Dr Belinda Beck**<sup>1</sup>, Sally Dzera<sup>1</sup>

*1Griffith University, Gold Coast, Australia*

#### Abstract

**Background:** Lower limb injuries are the cause of the greatest number of days lost to military training and comprise one of the largest associated costs to Defence. Bone injuries take the longest to heal and are the most common cause of medical discharge from the Army. Bone stress injuries are primarily caused by overly rapid increases in exercise training. It is well-recognised that if such increases are applied gradually, muscles and bones will adapt to the extent that physical training can be tolerated and injuries avoided. As the demands and time constraints of recruit training (RT) preclude gradual increases in musculoskeletal loading, training-related injury is a frequent and predictable consequence. The goal of the proof of concept PREFIT project is to implement a novel pre-RT conditioning program to prepare the musculoskeletal system for the rigors of RT, and reduce rates of injury.

**Methods:** We are in the process of enrolling candidates for the Army from the Brisbane area to a supervised pre-conditioning program targeted to the musculoskeletal system, particularly the lower extremity. The exercise program has been designed to preferentially load the lower extremity musculoskeletal tissues in a manner that will stimulate bony adaptation using a safe progression to optimally prepare the tissues for recruit training. A comprehensive suite of physical and functional measures are collected pre and post intervention training (laboratory-based testing of bone and muscle mass, density and morphology, along with lean and fat mass). Candidates then train for a minimum of 2 and maximum of 5 days per week up to the time of enlistment. At that time, we also travel to the Army Recruit Training Centre, Kapooka to coincide with the enlistees first day and conduct a simplified array of physical and functional tests relevant to musculoskeletal health on all of their consenting platoon mates, including heel bone strength (quantitative ultrasonography), isometric muscle strength (leg strength dynamometry), muscle power (vertical jump test), serum vitamin D, past physical activity participation (BPAQ), dietary calcium (AusCal), and previous injuries. We then track musculoskeletal injuries sustained during RT of all platoon members so that comparisons can be

made between those who participated in PREFIT training and those that did not. Repeat testing of all platoon members also occurs immediately prior to marching out. The ability of relevant physical and behavioural characteristics of recruits (age, sex, weight, height, serum 25(OH)D, dietary calcium, prior injury, muscle and bone strength parameters, etc.) to predict rates of lower extremity musculoskeletal injury during recruit training will also be examined. A cost-effectiveness analysis is to be performed including the costs of training and health service use from the Army and other health providers as well as the cost of the pre-conditioning training.

**Results:** We have recruited 39 of the intended 100 candidates into the pre-training arm and 230 of their platoon-mates into the study to date. Outcomes so far are highly positive, suggesting a beneficial effect of the pre-training program on musculoskeletal injury in RT. The current report will describe details of study progress.

#### Biography

*Belinda Beck is a Professor in the School of Allied Health Sciences and Menzies Health Institute Queensland at Griffith University, Gold Coast campus where she teaches musculoskeletal anatomy and conducts bone research. She is also a Director of The Bone Clinic, a health service with a focus on exercise for people with osteoporosis and other bone conditions in Coorparoo in Brisbane. Belinda graduated from The University of Queensland with a degree in Human Movement Studies (Education) and from the University of Oregon (Eugene, Oregon, USA) with a Master of Science (Sports Medicine) and a PhD (Exercise Physiology). She then completed a postdoctoral research fellowship in the Stanford University School of Medicine (California). Her work, primarily related to the effects of mechanical loading on bone, has involved both animal and human models, from basic to clinical research. Her particular focuses have been prevention and management of bone stress injuries, and exercise interventions for the prevention of osteoporosis and fracture, including children, young and older adults, athletes and the military.*

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### TCCC, Teamwork and Calm Thinking Saves Lives After a Complex Attack Against a Coalition Base in Afghanistan

**Paul Mayer<sup>1</sup>**

*1 Navy, Potts Point, Australia*

#### Abstract

**Introduction:** A Forward Operating Base (FOB) in Afghanistan suffered a complex attack by insurgents, what followed was a fire fight, 4 insurgents dead, 1 coalition dead, 8 Afghan security staff dead with a total of 38 casualties. As the Senior Medic, I provided leadership, clinical interventions based on Tactical Combat Casualty Care (TCCC) and experienced the physiological effects commonly seen in stressful situations.

**Case Description:** In August 2015 at 2210hrs a FOB in Afghanistan suffered a complex attack by insurgents. A Vehicle Borne Improvised Explosive Device (VBIED) detonated, followed by 3 insurgents with small arms fire, RPG'S, grenades and suicide vests. I awoke to the explosion and gun fire; I immediately made my way to the Role 1 facility and fortuitously chose the right exit as a suicide bomber detonated himself outside the other exit. On arrival the Role 1 was unserviceable and we created a Casualty Clearing Position (CCP) in a passageway. There was minimal light, thick dust, the ceiling collapsed, lights and wires hung from the roof and there was an eerie but surreal feeling as the fire fight continued outside. The Command Surgeon sustained injuries and was eventually medevac'd. I was the Senior Medic, and having been in country for just over 1 week, took control and managed the CCP.

The injury types were penetrating trauma from small arms fire and fragments, over pressure injuries from the blast and mainly Traumatic Brain Injuries (TBI) from building damage as the ceiling collapsed on personnel. Treatment of casualties was based on TCCC principles; rapid haemorrhage control, airway control with nasopharyngeal airways, chest seals for chest trauma and needle decompressions for suspected tension pneumothoraxes. TXA was used on two patients meeting criteria, normotensive resuscitation was followed and ketamine was only used once after most patients had cleared the CCP. A strong emphasis was placed on the basics of treatment with bystanders assisting. 9 Liners were sent and all critical patients were Medevac'd to Role 2 and Role 3 facilities in less than 3 hours. After all casualties were cleared the CCP was reset

in anticipation for future attacks, here litters were prepared, equipment scrounged from the Role 1, and ad-hoc teams arranged and briefed.

**Discussion:** This attack saw combat medicine based on the TCCC principles with very little definitive care being rendered at the scene it was rapid TCCC and AME. The scenario was emotionally provoking for most at the scene, treating patients, and trying to remain calm while not knowing many facts about the situation outside. During the scene I relied on tools to remain calm and not get cognitively overloaded. I offloaded simple tasks to bystanders, used heuristics for rapid treatment, voiced laymen mental models for treatment plans, and I was personal speaking with all patients and reassured them with humour. These and other simple tools combined with an excellent team work approach resulted in an overwhelming success. This presentation will concentrate on how human factors influence performance and how these can be mitigated with training.

#### Biography

*Joined the RAN 2000, became a Clinical Manager Medic in 2006, promoted to Chief Petty Officer in 2013. Spent over 7 years at sea, operationally deployed on Operations Resolute, Anode, Relex, Relex II, Slipper, and most recently Highroad 2015/16. I have served on HMA Ships Manoora, Success, Leeuwin, Melville, and Newcastle as well as embarked on HMA Ships Choules and Canberra while part of the Maritime Operational Health Unit. I Completed the NSW Flight Paramedic Induction Course 2014 and hold a Bachelors of Clinical Practice (BClinPrac) from Charles Sturt University 2011.*

*Awarded the following honours and awards:*

- Australian Defence Medal,
- Afghanistan Medal,
- Australian Active Service Medal Clasp ICAT,
- Australian Operational Service Medal – Border Protection,
- Australian Operational Service Medal – Greater Middle East Operation
- NATO Non Article 5 Medal with Clasp Afghanistan
- Commander Australian Navy Systems Command Commendation – Silver
- Navy Commendation – Bronze
- United States Combat Action Badge

*I have been married to Bianca for over 10 years and have two children, Dean aged 5 and Alyssa aged 2. I am currently posted to Fleet Health Division as the Fleet Clinical Manager Medic.*

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### The Australian Defence Force Policy on Maternal Health Care: What's The Problem Represented To Be

**LTCOL Maureen Montalban<sup>1</sup>**

*1 Department Of Defence, Joint Health Command, Canberra*

*2 Flinders University, Adelaide*

#### Abstract

**Objective:** To better understand the health care provided to pregnant women in the Australian Defence Force (ADF), this presentation provides a critical analysis of the policy that governs the provision of this care.

**Method:** This presentation provides a critical analysis of Health Directive 235 – Management of pregnant members in the Australian Defence Force. Bacchi's 'What's the problem represented to be' (WPR) framework was utilised to analyse this policy. It uses this framework to identify how pregnancy has been problematised and investigates alternate representations.

**Results:** Utilising Bacchi's WPR framework, a critical analysis Health Directive 235 – Management of pregnant members in the Australian Defence Force identifies pregnancy as a health care issue that requires specialist intervention and care. This representation is aligned with the medicalisation of birth and is a reflection of what has historically been the state of affairs in maternity care within the general Australian health care system. The ADF however now lags behind contemporary practice and research that emphasises women centred care, that is, care that takes into account their needs, preferences and whereby their choices are respected; a model of care not contained in the ADF policy.

**Conclusion:** How pregnancy is represented in current ADF policy has direct implications on the health and wellbeing of women who are pregnant, across at all stages of pregnancy and childbirth (antenatal, intra-partum and post-partum). An alternative representation will be discussed in the presentation and how this can be achieved within the ADF.

**Implications:** A research gap has been identified as a result of this critical analysis. In particular, identifying what ADF women know and want regarding their maternity care; as well as examining the possible introduction of referral pathways not contained in HD235.

#### Biography

*LTCOL Maureen Montalban completed a Bachelor of Economics (Social Sciences) in 2002 and a Graduate Diploma in Science (Psychology) in 2003, both at the University of Sydney. In 2013 she completed a Master of Psychology (Health) at Monash University and in 2015 commenced a Doctor of Public Health (Research) at Flinders University investigating the experience of pregnancy and maternal health care within the context of the Australian Defence Force. LTCOL Montalban joined the Regular Army in 2004 as a psychology officer and throughout her career has worked in research, assessment, counselling, training and operational psychology. LTCOL Montalban has deployed in support of ADF personnel to Operation CATALYST (Iraq – Middle East Area of Operations), Operation ASTUTE (Timor-Leste), Operation ANODE (Solomon Islands) and Operation SLIPPER (Afghanistan – Middle East Area of Operations). She is currently the Staff Officer Class One Mental Health and Psychology at Garrison Health Operations, Joint Health Command.*

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### The Battles of the Somme - Medical Aspects

**Michael Dowsett AM**

#### Abstract

During a period of seven weeks in 1916 in the Battle of the Somme the AIF suffered 23,000 casualties of which more than 6,700 died. On 23rd July 1916 1 Anzac Corps and the 2nd British Corps attacked the French village of Pozieres. A further attack in early August was attempted on the German held fortress at Moquet Farm. This campaign was the first real test for the AAMC since Gallipoli. This presentation will address the issue of casualty management incorporating some personal observations by those involved.

### Biography

*Michael Dowsett is a former Director General of Naval Health Service with an interest in military history. He has published in several publications and presented previously at AMMA. He is currently a Volunteer Guide at the Australian War Memorial in Canberra*

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## The Diagnostic Validity of Physical Symptoms in PTSD Screening in the Military

**Kristin Graham**<sup>1</sup>, Prof Alexander McFarlane<sup>1</sup>, Dr Miranda Van Hooff<sup>1</sup>, Dr Amelia Searle<sup>1</sup>, Dr Ellie Lawrence-Wood<sup>1</sup>

<sup>1</sup> Centre for Traumatic Stress Studies, The University Of Adelaide, Adelaide, Australia

### Abstract

PTSD frequently remains undetected in the military setting and can be highly debilitating when left untreated. Suboptimal detection rates may result from the under-reporting of psychological symptoms due to factors such as perceived negative stigma or somatic health attribution. Altered symptom reporting may also result in under diagnosis by medical staff. Determining additional factors that can identify PTSD within first-stage screening could potentially improve detection rates in a variety of settings and reduce the economic and personal burden of PTSD.

Various studies have established a strong relationship between PTSD and physical symptoms. Considering this, these symptoms may be a valuable screening tool for PTSD, particularly in circumstances where personnel are reluctant to disclose psychological symptoms. Physical symptoms are not part of the Diagnostic and Statistical Manual fourth edition (DSM-IV; American Psychiatric Association, 2000) or the World Health Organizations International Classification of Diseases 10th revision diagnostic criteria for PTSD and therefore are not included in current screening processes. Due to the strong association yet low face validity of physical symptoms for PTSD we examined whether physical symptoms could be used to screen for PTSD in deployed military personnel.

Data came from the Australian Defence Force Mental Health Prevalence and Wellbeing Study, limited to the MEAO deployed population (N=16991). Participants completed a physical symptoms scale, and a gold-standard diagnostic interview assessing PTSD. Receiver operating characteristic (ROC) analyses were used to generate weighted diagnostic validity estimates for self-reported physical symptoms to predict 30-day DSM-IV PTSD.

We found that a combination of ten physical symptoms demonstrated the ability to discriminate well between those with and without PTSD, with a cut-off of 3 providing good specificity and sensitivity. This measure appears well-suited as an alternative PTSD screening measure, in situations where standard PTSD screeners are inappropriate or ineffective.

### Biography

- *Bachelor of Psychology (Hons) Flinders University*
- *Diploma of Applied Science (Podiatry) University of South Australia*

*Kristin has over 20 years' experience as a clinical podiatrist including providing treatment to RAAF personnel at the Edinburgh Base in Adelaide, as well as to veterans in the community. She recently returned to study, completing her Bachelor of Psychological Science (Honors) at Flinders University, Adelaide in 2014. In 2013, Kristin received the Gary Beswick Memorial Prize (awarded to the mature age female student with the highest academic score in 3rd year Psychology topics). Kristin is the inaugural recipient of the prestigious Australian Rotary Health 2015 ANZAC PhD scholarship, which funds research into post-traumatic effects from war-related stress.*

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## The Effects of Environmental Toxins and Traumatic Stress on the Reproductive Health of Australian Defence Force Veterans

Rachelle Warner

*1 Defence*

*2 University of Adelaide*

### Abstract

Female Members are the fastest growing cohort in the ADF. As at 1 June 2016, 15.5% of the ADF permanent workforce (excluding Continuous Full Time Service (CFTS)) is female (Navy 19.1%, Army 12.1% and Air Force 19.2%). The number of females serving in the ADF is 216 more than the same time last year (Navy +49, Army +72 and Air Force +95). The increasing number of serving women has had a flow on effect to DVA. Since 2010, female veteran client numbers have increased steadily – approximately 0.2 per cent each year. As at 28 June 2013, it is estimated that 7.6 per cent of veterans with one or more accepted conditions under any Act (VEA Act, SRCA or MRCA) were female. This equates to 11,247 females from a total 147,789 veteran clients. For those under the age of 25, the proportion is 23.1 per cent, or 315 females from 1,362 total veteran clients .

There is a growing need to understand the effects of military service on health status, with a goal to broaden the knowledge of Defence and Veterans' Affairs policy leaders and clinicians about post-deployment health issues for veterans, particularly women. With the continued expansion of women's roles in the military, better understanding of the potential health effects of military service on women during and after their military service is essential. Although some work has been done internationally, the evidence on the influence of military service on reproductive health is mixed and relies on a modest literature base covering Vietnam and Gulf War veterans. Very little has been done on the more recent conflicts, and almost none with the Australian military population.

The findings of the almost exclusively US literature indicate that pregnancy outcomes do not appear to differ among deployed vs undeployed women. However, while several studies demonstrate non-significant differences by deployment status, others present contradictory evidence on the influence of military service on rates of spontaneous abortion, stillbirths, and ectopic pregnancies. Influences on birth outcomes raise more questions than they answer. Only one study reported birthweights, which did not appear to differ by deployment experience of

their mothers . More studies have focused on birth defects: about half indicate there are no significant differences in birth defect rates among deployed vs non-deployed women, whereas the other half report higher rates that are not statistically significant (reflecting problems in statistical power associated with sample sizes for these rare events) or in fact reflect higher rates.

In 2013, Rivera and Johnson reviewed specifically US literature from 1970 to 2012 (covering Vietnam through to the current conflict in the Middle East) which suggested that US female veterans experience reproductive and gynaecological problems more than the general population. Follow-up on these studies for long-term reproductive and gynaecological outcomes in female veterans is not known. Although several self-reported measures are published, the incidence of physician-diagnosed birth defects in offspring, conception difficulties, breast pathology, and cervical pathology is not known. This is an important gap in the literature, as this longer-term information would benefit today's female veterans.

There is a dearth of literature related to the reproductive health of Australian Defence Force members who have deployed on operational service in recent years to the Middle East, East Timor, Solomon Islands and Bougainville.

### Biography

*Rachelle Warner is a toxicologist and environmental risk assessor educated at the University of Sydney and RMIT University in Melbourne. Her career within Defence has included Senior Departmental Liaison Officer to the Minister for Defence, Director of the Defence Centre for Occupational Health and Safety, occupational medicine, personnel operations in Army and HQJOC, and Commissions and Boards of Inquiry for CDF. Rachelle is a CBRN Medical Officer who has lectured on toxic industrial chemicals on this course and on Injury Prevention and Risk Assessment at the ADF PTI School. Rachelle also has some experience in international and operations law, including as an adviser to Defence regarding health threat assessments of new weaponry. She is currently undertaking her PhD at the University of Adelaide Centre for Traumatic Stress Studies under Prof Sandy McFarlane and A/Prof Susan Neuhaus studying the effects of deployment on the reproductive health of ADF veterans.*

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### The Evolution of Rehabilitation in DVA

**Mike Armitage**<sup>1</sup>

*1 Department Of Veterans' Affairs, Canberra, Australia*

#### Abstract

DVA commenced providing rehabilitation for veterans returning from World War One. The repatriation schemes following the 2 World Wars included extensive provisions to assist returned servicemen back into civilian employment. These provisions were the forerunners to vocational rehabilitation in Australia.

Since then and mainly governed by the rehabilitation provisions of separate pieces of legislation DVA has expanded the types and level of support to injured or ill serving and ex-serving members.

Changes to the DVA approach to rehabilitation had its genesis with the introduction of the Military Rehabilitation and Compensation Act in 2004 where the philosophy of whole of person rehabilitation was the basis of the legislation. As demand for rehabilitation has expanded along with the broadening of the approach by industry, DVA needed to move with those changes to meet the needs of our specific client group. A recent review of how DVA provides rehabilitation services to eligible veterans has resulted in an updated framework around an integrated multidisciplinary approach, early intervention and continuity of care and re-emphasis on whole of person rehabilitation with particular weight on psychosocial rehabilitation.

This presentation will demonstrate how the types of rehabilitation service and support has evolved, particularly over the past 25 years. The relationships between DVA and Defence particularly in recent years in working collaboratively as legislated Rehabilitation Authorities and assisting transition of injured and ill service personnel will be emphasized. In particular initiatives including the Veterans Employment Assistance Initiative and a Timely Engagement Program will be discussed.

#### Biography

*Mike currently works with the Department of Veterans' Affairs (DVA) and is responsible for a wide range of policy and new business initiatives. This involves wide consultation and involvement with government and private organisations in the compensation, rehabilitation and health areas. In particular collaboration with the ADF Rehabilitation Program seeks to ensure the legislated role of Rehabilitation Authority fully supports serving and former members of the ADF.*

*Coming from a subject specialist training and development role in the rehabilitation and compensation business areas, Mike is leading change through a project designed to revise the rehabilitation business model within DVA. An early deliverable has resulted in the establishment of a framework for service delivery of services based on a whole of person approach, continuity of care including the transition process from Defence and a multi-disciplinary approach to supporting clients.*

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### The Impact of Military Service on Families

**Dr Galina Daraganova**<sup>1</sup>, **Dr Jacqui Harvey**<sup>1</sup>

**Kyleigh Heggie**<sup>2</sup>

*1 Australian Institute Of Family Studies, Melbourne*

*2 Department of Veterans' Affairs, Canberra*

#### Abstract

The Transition and Wellbeing Research Programme Family and Wellbeing Study is the largest and most comprehensive study undertaken in Australia to examine the impact of contemporary military service on the mental, physical and social health of the families of serving and ex-serving personnel.

One of the goals of the Programme is to enhance the evidence base that informs policy and support services for ADF families, in both the Department of Defence and the Department of Veterans' Affairs. The Family Wellbeing Study, one of the three studies comprising this Programme, is investigating the psycho-social health and wellbeing of family members of current and transitioned ADF members. Firstly, this paper outlines the challenges in family research methodology. Secondly, the paper describes the research methods used in this study as well as highlights how the results, particularly in relation to support services, may be used to inform new directions toward improving outcomes for the families of current and transitioned ADF members.

#### Biography

*Dr Galina Daraganova is a quantitative psychologist specialising in social statistics and network-based social processes. With a background in quantitative psychology, her research focuses on use of large-scale*

surveys, particularly longitudinal studies that include multiple family members to analyse data across a wide range of issues. Her research interests focus on social and family determinants of successful developmental transitions during childhood, adolescence, and young adulthood and involve analyses of health and education inequalities, soft skills development, and role of others.

Kyleigh Heggie has been the Director of Research within the Department of Veterans' Affairs (DVA) since 2011. Kyleigh has had a long career in clinical psychology and research criminology in Australia, Europe and Africa working largely with divergent criminal justice systems. Since joining DVA, Kyleigh has taken a break from her life of crime and has been discovering the world of military and veteran health and is responsible for the management of DVA's strategic research agenda. Kyleigh and her team are working to generate best practice research into the health and wellbeing needs of Australia's veteran community.

Dr Jaqueline Harvey is a Design Manager and Research Fellow specialising in designing the survey questionnaires. While completing educational psychology studies, Jacqueline worked as a psychologist in numerous educational settings at the primary, secondary and tertiary level. This work included counseling (children, adolescents and adults), psycho-educational assessment (specialising in learning disabilities such as dyslexia), school consultations (professional development workshops with school staff), educational research (e.g., investigating outcomes of interventions implemented in schools) and lecturing at the University of Melbourne (undergraduate and postgraduate teaching and educational psychology students).

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## The Longitudinal ADF Study Evaluating Resilience (LASER-Resilience): Three Detailed Reports on Pre-Military Enlistment Trauma, Alcohol and Tobacco Consumption, and Social Support

Dr Lisa Dell<sup>1,3,4</sup>, Carolina Casetta<sup>2</sup>

1 Phoenix Australia

2 University of Melbourne

3 Department of Defence

4 Department of Psychiatry

### Abstract

The Directorate of Strategic and Operational Mental Health (DSOMH) has been conducting the Longitudinal ADF Study Evaluating Resilience (LASER-Resilience) since 2009, in collaboration with Phoenix Australia. LASER-Resilience is a longitudinal study of the psychological and environmental factors that contribute to the resilience of ADF members. Data was collected upon enlistment or shortly after training commenced for members who enlisted between Nov 2009 and Dec 2012 (Time 1), at the end of Initial Training or 12 months following Time 1 (Time 2) and at 12 months intervals for the first three years of their career (Time 3 to Time 5). The final Time 5 administrations are due to cease in Oct 16.

Since mid 2015, Phoenix Australia has produced three LASER-Resilience detailed reports. These reports have explored topics of interest to Defence that intersect with the longer term aims of the study and have provided useful information about the way in which ADF members cope with military training and their early career. Specifically, they have explored how Pre-Enlistment Trauma, Alcohol and Smoking and Social Support are related to Mental Health and how they change over time. This presentation will discuss the key findings from these reports.

These detailed reports will also inform the planning of the Final LASER-Resilience Resilience Report, which is the next and final stage of this study. This presentation will include a brief outline of what this report will cover and what it is likely to achieve.

### Biography

Dr Dell is a Senior Research Fellow in the Department of Psychiatry at the University of Melbourne. Lisa has a background in psychology and completed her PhD in the area of stress and emotional management. She is also currently undertaking a Masters in Evaluation at the University of Melbourne. Lisa has

*extensive experience in managing research and evaluation projects at Phoenix Australia, including the development of the Australian Guidelines for the Treatment of Acute Stress Disorder and Posttraumatic Stress Disorder, the three-year evaluation of Department of Veterans' Affairs (DVA) Mental Health Initiatives, and DVA's Scientific Health and Wellbeing Evidence Schema research project. Lisa is currently leading the Longitudinal ADF Study Evaluating Resilience and the National Health and Medical Research Council partnership grant study of Intensive Prolonged Exposure therapy.*

*Ms Carolina Casetta is a Registered Psychologist and is the Senior Research Officer in the Mental Health Research and Evaluation Team within Joint Health Command. Ms Casetta's primary role in this team is the Project Manager of the Longitudinal ADF Study Evaluating Resilience (LASER-Resilience).*

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### The Royal Australasian College of Military Medicine

**Dr Vanessa Weenink<sup>1</sup>**

*1 NZDF, Mairehau, New Zealand*

#### Abstract

Australia and New Zealand struggle with the perennial issue of training our medical personnel and maintaining skills whilst also meeting operational outputs. This leads to a shortage of Medical Officers for deployment. Medical Personnel take a long time to train and our militaries rely on external providers to train our people, often with incomplete relevance to the military professional context. By necessity and the nature of service commitments, academic study is frequently delayed or interrupted. Questions of how best to resolve these issues have been approached in various ways, with piecemeal solutions to the problems. A radical solution is proposed-albeit not original: Vocational recognition of military medicine as a unique medical specialty in its own right. Part of this solution proposes an ANZAC medical college: the Royal Australasian College of Military Medicine. The Irish defence force has managed to gain vocational recognition of military medicine with the Irish medical council. The Irish example is used to postulate a possible road-map for an ANZAC solution. The purpose of this talk is to spark dialogue and further encourage rigour of military medicine.

#### Biography

*Currently working half-time for NZDF as a Staff Officer for Health Research- a new role in the Health Directorate. GP in Christchurch, New Zealand. Former RF Medical Officer.*

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### The Special Operations Rescue Medic (SORM): Meeting Integrated Medical Support Needs During Special Operations

**Chris Williams<sup>1</sup>**

*1 RAAMC, Holsworthy, Australia*

#### Abstract

**Introduction:** Special Operations Command (SOCOMD) is a dynamic organisation that has bespoke mission sets. RAAMC/NC staff posted to SOCOMD have the unique role of providing medical support to these Special Operations Forces (SOF) in all environments. First hand didactic and short learning loop activities have informed and shaped SOCOMD medical training throughout the past decade of conflict in the Middle East. Concurrent operations, engagement and exchanges with Allied SOF medical organisations have also resulted in significant lessons learned. After conducting a Training Needs Analysis (TNA) in 2014 SOCOMD medical elements identified a mismatch in the ADFMC and requirements of the SOF medic. Subsequently SOCOMD has developed a dedicated SOF medic course – Special Operations Medical Rescue Course (SOMRC) which is specifically designed to address the needs of the SOF medic.

**Aim:** The aim of this presentation is to disseminate operational medical lessons learned and inform the wider ADF HLTH community of the requirements and training of the SOF medic.

**Method:** A literature review was conducted as well as the interrogation of WHS databases, operational lessons learned, coalition SOF medical standards against ADFMC content and the RAAMC MAE. This review resulted in a TNA aimed at identifying roles and skills varying from ADFMC core curriculum.

**Conclusion:** The SOF medic requires an increased level of training and scope of practice commensurate



with the unique missions they are assigned to support. The SOCOMD medical training pipeline now provides an effective and proven model for deployment readiness. This pipeline also serves as a vehicle for the implementation of emerging evidence based medicine and medical equipment. Throughout the process of analysis SOCOMD also identified a lack of clinical data capture systems that could be used to advance ADF HLTH outcomes. Whilst SOMRC addresses the current known requirements of SOF medics further research is required in this area.

### Biography

*SGT Williams is a Special Operations Medic and full time Army Underwater Medicine Clinician within Special Operations Command (SOCOMD). His association and experience in SOCOMD has spanned the last ten years.*

*He has completed the Navy Underwater Medical Clinician, CBRN Medical, RAAF Aviation Nursing Officer, and ADF Rotary Wing Aeromedical Evacuation courses. He is a member of the Wilderness Medical Society (WMS) and a Member of Paramedics Australasia (MPA) and has been a contributor to military medical publications such as the Journal of Special Operations Medicine (JSOM) and the official RAAMC journal "Paulatim".*

*SGT Williams has seen extensive action during four deployments to the Middle East including three tours as a Special Operations Task Group (SOTG) medic in Afghanistan. He has also served as the senior medic within Tactical Assault Group - East during four years of Counter Terrorism operations and the senior medic Special Forces Training Centre.*

*In 2014 he was invited to be the international instructor on the Canadian Special Operations Medical Technician Course. He has also been the senior instructor on numerous SOCOMD medical exercises as well as FORCOMD Ex Primary Survey (Mod 3) and has been instrumental in establishing the Special Operations Medical Rescue Course (SOMRC).*

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## Towards a Three-Dimensional Motion Analysis System Based on Kinect V2 for Calculating in Vivo Knee Joint and Muscle Forces

**Associate Professor Adam Bryant<sup>1</sup>, Alessandro Timmi<sup>1</sup>, Dr Prasanna Sritharan<sup>1</sup>, Dr David Ackland<sup>1</sup>, Associate Professor Peter Pivonka<sup>1</sup>**

*1 The University of Melbourne, Carlton, Australia*

### Abstract

**Background:** Computer gaming hardware, such as Microsoft Kinect v2, has generated considerable interest in the biomechanical community due to its markerless tracking capability. This feature could allow examining different aspects of human movement inexpensively, with considerable benefit for clinical use. If combined with open-source biomechanical modelling software such as OpenSim (Stanford, US), Kinect may enable the determination of in vivo muscle forces and joint loads, which may help assessing some musculoskeletal conditions such as osteoarthritis. However, the out-of-the-box tracking algorithm of Kinect v2 was found to be quite inaccurate when compared to marker-based motion capture systems, with errors (bias  $\pm$  limits of agreement) up to  $37 \pm 9^\circ$  for peak knee flexion for walking task (Mentiplay et al. 2015, Concurrent validity and inter-day reliability of spatiotemporal and kinematic variables, J. Biomech. 48). To enhance Kinect v2 tracking accuracy, we developed a novel tracking methodology based on custom coloured markers and computer vision techniques. The objective of this study is to assess the agreement between this novel method and a gold-standard, marker-based motion capture system (Vicon) in terms of knee joint kinematics and dynamics.

**Methods:** Twenty participants (10 females) with no history of neuropathology or trauma/disease in either knee will be recruited. Vicon and Kinect v2 markers will be placed over key anatomical landmarks of the lower limb. Participants will perform 5 slow maximal single-leg squats on an AMTI force plate, with arms folded across the chest. Kinect v2 will be positioned 2.5 m in front of the participants. Lower limb kinematics will be tracked using our novel Kinect-based system and Vicon concurrently. Kinematic and kinetic data will serve as input for OpenSim to calculate joint angles (using inverse kinematics) and torques (via inverse dynamics). Quadriceps, hamstrings and triceps surae forces will then be calculated using a static optimization approach. Muscle and ground reaction forces will then be used to determine knee-joint forces. Paired samples t-tests ( $p < 0.05$ ) will be used to compare muscle and

joint forces generated by Kinect and Vicon.

**Results & Discussion:** Preliminary results on a single subject show significantly improved agreement between Kinect (using our novel approach) and Vicon (i.e.,  $-1\pm 5^\circ$  for hip flexion,  $-3\pm 2^\circ$  for knee flexion and  $0\pm 2^\circ$  for ankle flexion in the sagittal plane), compared to the off-the-shelf Kinect v2 markerless tracking algorithm. Given this remarkable improvement in tracking accuracy, we expect significant agreement also in the evaluation of dynamic quantities, such as knee joint and muscle forces obtained via musculoskeletal modeling using OpenSim. This data will be presented and discussed.

### Biography

*Associate Professor Adam Bryant is an NHMRC Fellow based at the University of Melbourne, Department of Physiotherapy. Adam's research investigates gender and developmental-related biomechanics, injury prevention strategies, computational modeling and imaging of the musculoskeletal system (healthy and pathological) and risk factors for knee osteoarthritis onset and progression. He has made major contributions to the understanding of the role(s) that muscles play in the mechanical loading of joints and subsequent adaptive and degenerative structural changes.*

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