MILITARY HEALTH SHAPING THE FUTURE

2011 **AMMA** CONFERENCE
COMMEMORATING 20 YEARS

21–23 OCTOBER 2011
CROWN CONFERENCE CENTRE
MELBOURNE VICTORIA

20TH ANNIVERSARY

AUSTRALIAN MILITARY MEDICINE ASSOCIATION

2011
HANDBOOK

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Dr John Shephard, GP
3 RAR, Holsworthy NSW

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WELCOME

On behalf of the Organising Committee of the Australian Military Medicine Association, I welcome you to the 2011 AMMA Conference at the Crown Convention Centre, Melbourne from 21 to 23 October.

The annual AMMA Conference is the most important annual gathering of health professionals who are involved in Military Medicine and Veterans' Health. At the 2011 conference there will be the over 400 delegates who will have the opportunity to share in the latest advances and issues in all the disciplines associated with management of trauma in combat and disaster situations, as well as broadening this to the long term health effects.

Papers read at previous Conferences have stimulated important discussion and brought to the fore new and stimulating developments that encompass a broad range of topics, including trauma surgery, mental health, health surveillance, operational health, research and ethics and many other streams.

This year our keynote speakers include, MAJGEN Jim Molan (R'td) who will be talking about Conflict: The Big Picture, Prof Jim Ryan (UK) who will be presenting on the lessons from the Falklands to Afghanistan from a trauma surgeon's perspective and David O'Brien from USAF Pacific Airforce Command presenting on Joint Medical Air Transport Teams (JMATT) and the Humanitarian Assistance Rapid Response Team(HARRT). There are over 90 papers being read, demonstrating yet again the importance of this conference and the high quality work that is being done among the military and veterans' health communities.

As always, there are a range of social functions being held, the highlight being the 20th Anniversary Conference Dinner to be held at the Melbourne Town Hall and the Welcome Reception at the conference centre.

The conference will be opened on Friday morning by the Minister of Veterans' Affairs, The Hon Warren Snowden MP. Chief of the Defence Force, GEN David Hurley, AC, DSC will also be in attendance.

Finally, the quality, value and success of this conference are due to the hard work of the Organising Committee ably led by Dr Nader Abou-Seif. On your behalf I offer them the Association's thanks and gratitude for yet another stunning conference.

We are also indebted to our commercial sponsors who continue to support us and whose contributions in no small way help to keep our conference fees reasonable. This year we have 36 booths and once again CM Health is our principal sponsor together with Aspen Medical our welcome reception sponsor. This year, the Association is also trialling an "App" for tablets for delegates to assist in maximising their participation.

I encourage all delegates to participate fully in this year's conference, to take the opportunity to hear about new and exciting advances in military and veterans' health issues and, to engage with your colleagues.

Dr Greg Mahoney
President, Australian Military Medicine Association

PROGRAM

PROGRAM

THURSDAY, 20TH OCTOBER 2011

1300	Registration Desk Opens

FRIDAY, 21 OCTOBER 2011

0730	Registration Desk Opens
0900-0915	**CH1 & CH2: Plenary: Symposium Welcome** *Dr Greg Mahoney, President, Australian Military Medicine Association*
0915-0930	**CH1 & CH2: Plenary: Symposium Welcome** *Minister for Defence Science and Personnel - The Hon. Warren Snowdon MP*
0930-1020	**CH1 & CH2: Plenary: Session 1: Keynote Speaker** *Conflict: The Big Picture - MAJGEN Jim Molan R'td*
1020-1040	**CH1&CH2: Plenary: Launch of the 2010 ADF Mental Health Prevalence and Wellbeing Study and the 2011 ADF Mental Health and Wellbeing Strategy** - *Minister Warren Snowdon MP*
1040-1100	Morning Refreshments – Trade Exhibition Area

1100-1235	SESSION 2 MIDDLE EAST AREA OPERATIONS HEALTH STUDY	SESSION 3 FUTURE CAPABILITY	SESSION 4 AVIATION MEDICINE	SESSION 5 SYMPOSIUM COMBAT CASUALTY CARE
	M12&M13	**CH3**	**M15&M16**	**CH1&CH2**
1100-1120	*Annette Dobson, Dr Keith Horsley, Carol Davey, Wu Yi Zheng, Michael Waller*	Training health personnel for disaster humanitarian responses: the power of immersion *Dr Ian Norton*	Evaluation of Human Centrifuge training for RAAF fast Jet Aircrew *Dr Glenn Pascoe*	The continuum of Combat Casualty Care on the Modern Asymmetric Battlefield from Care Under Fire through to the Damage Control *Dr Martin Graves, Anthony Chambers, Nathan Grumley*
1125-1145		The CANBERRA Class LHDs: a new maritime role enhanced capability for the Australian Defence Force *Dr Neil Westphalen*	Physiological equivalence of hypoxia produced by hypobaric normobaric, and combined altitude/ depleted-oxygen (CADO) conditions *Adrian Smith*	
1150-1210		Toward Validation of TIRI as a next Generation Deployable Health System *Daniel Arthur*	Therapeutic Intraocular Gas. When is it safe to fly? *Kylie Hall*	
1215-1235		The real time handheld electronic tracking device for mass casualty incidents *Mr Charles Blundell*		
1235-1330	Lunch – Trade Exhibition Hall			
1235-1330	Consultative Group Chairs Meeting – M15 & M16 (combined)			

PROGRAM

1330-1505	SESSION 6 MENTAL HEALTH PREVALENCE STUDY	SESSION 7 CLINICAL PRACTICE	SESSION 8 PREVENTIVE MEDICINE	SESSION 9 AN ORTHOPAEDIC MISCELLANY
	M12&M13	**CH3**	**M15&M16**	**CH1&CH2**
1330-1350	An Epidemiological of Mental Health in Serving Australian Defence Force Personnel: The Mental Health Prevalence Study *Prof Alexander McFarlane* The challenge of making accurate epidemiological estimates in Defence populations *Dr Miranda Van Hooff* The prevalence of mental health disorders in the Australian Defence Force: the healthy worker effect versus a risk employment environment *Col Stephanie Hodson* Combat exposure and non-military trauma as a cause of psychiatric disorder in the Australian Military *Prof Alexander McFarlane* The implications of findings from the Mental Health Prevalence study for service delivery within the ADF *Stephanie Hodson*	Garrison health transformation in the ADF: sharpening the blunt end *Tracy Smart*	Getting more bang for your buck from Australian Health Surveillance Programs: Recommendations from the literature *Judith Symonds*	Back to the wall – A case of complicated back pain *Benjamin Manion, Melissa Thompson*
1355-1415		Defence medical specialist support to garrison and operational health in the permanent force: a new model *Ian Young*	Training Hospital Based Surgeons to Operation in the Field *David Read*	Review of compensation claims for chondromalacia patellae: implications for the ADF *Dr Warren Harrex*
1420-1440		6RAR's Post War Scars *Glenn Mulhall*	CASPEAN,the Australian Casualty and Protective Equipment Analysis Project: An overview and current Status Report *Mark Jaffrey*	Endo Exo Femoral Prostheses (EEFP). A new technique to improve the treatment of above knee amputees (AKA) quality of life *Munjed Al Muderis*
1445-1505		Military Colour Vision Standards – Do We Need Them *Dr John Parkes*		Medical Indications for foot orthoses *Dr Tony Delaney*
1505-1535	Afternoon Refreshments – Trade Exhibition Hall			
1505-1535	Meeting JHC Clinical Board – Room M15 & M16 (combined)			

1535-1710	SESSION 10 STRESS & WELLBEING	SESSION 11 HISTORY AND LESSONS LEARNED	SESSION 12 LAW AND ETHICS	SESSION 13 OCCUPATIONAL HEALTH AND SAFETY
	M12&13	**CH3**	**M15&M16**	**CH1&CH3**
1535-1555	Wellbeing toolbox – development of a cognitive behavioural web self-help program *Jane Nursey, Chris Clarke*	The relevance of military trauma care to civilian practice *Mary Langcake*	Understanding the Military Rehabilitation and Compensation Act 2004 and its influence on the rehabilitation philosophy of the Department of Veterans Affairs and Defence *Michael Armitage*	The impulse noise hazard: detecting early noise induced hearing loss in the military setting *David McBride*
1600-1620	Research showing "vulnerability factors' for depression can inform training aimed at reducing vulnerability and increasing resilience *Helen Vidler*	Problems in paradise: medical aspects of the New Zealand occupation of Western Samoa, 1914-1919 *Michael Tyquin*	International Humanitarian Law/ Law of Armed Conflict. Black, white or shades of grey: Why should this concern medical personnel *David Thompson*	Using earplugs for noise protection – is defence meeting its "duty of care" to prevent noise-induced hearing loss *Dr Adrian Smith*
1625-1645	Stressful deployment experiences and childhood adversity as risk factors for post-traumatic stress, alcohol use and psychological distress after Australian Defence Force deployments *Wu Yi Zheng*	Women pioneers of medical corps: the stories of Major Lady MacKenzie and Major Makerras *Susan Neuhaus*	Managing a defence member suspected of malingering. A discussion of the legal and ethical issues for the frontline medical officer. *Michael Clements*	Predicting maintenance errors with organisation safety climate and fatigue factors *Robert Forster-Lee*
1650-1710	Clinical Examination in mild traumatic brain injury and its association with Cognitive Outcomes *Dr Mark Slatyer*	Clinical humanitarian lessons learned from Pakistan Assist 2 *Ian Norton*	Signing medical documents – what are the pitfalls *Brent Barker*	Silicone, earplugs and lubricant – AVMED's advice to aircrew *Adrian Smith*
1710	CLOSE			
1800 - 2000	Welcome Reception - Trade Exhibition Hall			

PROGRAM

SATURDAY, 22 OCTOBER 2011

0730-1730	Registration Desk open
0845–0900	Welcome to the Day and Housekeeping
0900-1000	**CH1&CH2: Plenary: Session 14: Keynote Speaker** *From the Falklands to Afghanistan and beyond – what have we learnt?" - Prof Jim Ryan*
1000-1030	Morning Refreshments – Trade Exhibition Hall

1030-1205	SESSION 15 MENTAL HEALTH SYMPOSIUM	SESSION 16 TRAUMA	SESSION 17 PREPAREDNESS	SESSION 18 VETERANS' HEALTH	SESSION 19 AVIATION MEDICINE II
	M12&M13	**CH1&CH2**	**M15&M16**	**CH3**	**M11**
1030-1050	ADF Mental Health Strategy and Wellbeing - Implications for Service Deployment *David Morton, Carole Windley*	Damage control resuscitation of the exsanguinating trauma patient: pathophysiology and basic principles *Eamon Raith*	Presenting at scientific conferences – who complies with the defence policies *Brent Barker*	A better future for Veterans' Chronic Care *Dr Graeme Killer*	Can I go bungee jumping, doc? *Kylie Hall*
1055-1115	The ADF Alcohol Management Strategy *Jennifer Harland*	Combat first aiders in Afghanistan – The MTF-1 experience *Andrew Whitworth*	Adapting commercial equipment solutions for defence health facilities *Glenn Keys*	Developing a framework for Veterans' Health Care: South Australian Perspective *Susan Neuhaus*	Airfield Medical response RNZAF perspective *Peter Hurly*
1120-1140	ADF Suicide Prevention Program *Michelle McInnes*	Pilot Australian Defence Force Military trauma Team at Royal Brisbane and Women's Hospital *Amanda Dines*	Experience with an Emergency Blood Donor Panel in the Solomon Islands *James Ross*	Cognitive processing therapy for combat-related posttraumatic stress disorder: a community based randomised controlled trial *David Forbes*	Aircrew fatigue in deployed operations. A literature review of the issues and challenges faced in managing fatigue while engaged in war-like operations *Michael Clements*
1145-1205	Mental Health service delivery in action progress, partnerships and priorities *Karen Green, Philip Siebler*	Maxillofacial trauma: lessons learned from the civilian frontline at John Hunter Hospital, Newcastle *Dr Barry Reed*	Preparing for deployments – developing personal resilience *Glenn Keys*	The Health and Wellbeing of Female Veterans *Dr Samantha Crompvoets*	

1205-1300	Lunch – Trade Exhibition Hall

1205-1300	Regional Triumverate Chairs Meeting - M11				
1205-1300	Anaesthetic Consultative Group Meeting - M15 and M16 Combined				
1205-1300	Poster Presentations (Exhibition Area)				
1300-1435	**SESSION 20** **MENTAL HEALTH**	**SESSION 21** **EDUCATION**	**SESSION 22** **AVIATION MEDICINE III**	**SESSION 23** **SYMPOSIUM REHABILITATION**	**SESSION 24** **MISCELLANY**
	M12&M13	**CH1&CH2**	**M15&M16**	**CH3**	**M11**
1300-1320	Long run mortality effects of Vietnam-era army service: evidence from Australia's conscription lotteries *Peter Siminiski*	An integrated ADF/EMST course: a qualitative evaluation and comparison with similar pre-deployment courses *Dr Bruce Waxman*	Aeromedical disposition of aircrew medical employment classification reviews, 2000 - 2009 *Dr Adrian Smith*	Essential Military Musculosketal Medicine *Dr Tony Delaney* Chronic Pain and Pain Complex – Illustrative Cases *Dr Stephan Rudzki* Enhancing and enriching the ADF Rehabilitation Program *Jim Porteous* Vocational Rehabilitation *Ross Mills*	Physician's Assistant in the ADF *Jason Brown*
1325-1345	Follow-up study of physical, psychological, social health and wellbeing in Australian Gulf War Veterans *Helen Kelsall*	Pharmacology knowledge and training of RAAF medical officers – is an infusion required? *Michael Lumsden-Steel*	A military transport pilot with poorly controlled epilepsy – how the 1% rule could allow them to keep flying *Dr Brent Barker*		The effect of a Period 4 week Treatment Exercise Protocol on Low back pain in Military Forces *Alibakhshi Esmaeil (Iran)*
1350-1410	Allostatic load: another way of understanding stress and its consequences *Renee Anderson*	Shock trauma platoon – what capability does it provide and what are the training requirements? *Mike Rowsell*	US Air Force School of Aerospace Medicine and the Aeromedical Consultation Service *Dan Van Syoc*		17 Combat service support brigade Home to the new deployable army health system *Clark Flint*
1415-1435	Key operational mental health themes from the Middle East Area of Operations *Kristi Heffernan and Alison Kaine*	CMVH Health Education Opportunities *Merilyn White*			A comparative two programs of massage therapy and physical therapy in the treatment of chronic knee pain in the Army Forces *Alibakhshi Esmaeil (Iran)*
1435-1505	Afternoon Refreshments – Trade Exhibition Hall				

PROGRAM

1505-1615	SESSION 25 CHALLENGES	SESSION 26 RAAF SESSION	SESSION 27 RESEARCH	SESSION 28 SYMPOSIUM VETERAN REHABILITATION: FROM RESEARCH TO PRACTICE
	CH3	**M15&M16**	**M12&M13**	**CH1&CH2**
1505-1525	Critical Incident Mental Health Support responses on ADF operations: key challenges and lessons learnt *Nicole Sadler, Kristi Heffernan*		Infrared interrogation of osseous stress pathophysiology in Australian Army recruits: a three month clinical case study *Daniel Arthur*	*Virginia Lewis, Lisa Gardner, Simon Graham*
1530-1550	Cautionary Tales from the Sports Medicine Clinics *Tony Delaney*		Comparison of Body Core temperature during a 5km march with the military work table guidelines *Alison Fogarty*	
1555-1615	The Rapid Learning Healthcare system: using practice based data to drive continuous quality improvements in rehabilitation service delivery *Dr John Shephard*		Cooling methods for emergency responders in tropical conditions *Matt Brearley*	
1630	AMMA Annual General Meeting			
1630	CLOSE			
1900-2330	20th Anniversary Conference Dinner – Melbourne Town Hall			

SUNDAY 23 OCTOBER 2011

0830-1300	Registration Desk open
0900-0930	**CH1&CH2: Plenary: Session 29** *Closed Loop Automatic Systems for Management of the Injured - George Beck*
0935-0955	**CH1&CH2: Plenary: Session 30** *The Intelligent Tasking Project 2010 – Aeromedical evacuation coordination in Southern Afghanistan - Bronte Douglas*
1000-1100	**CH1&CH2: Plenary: Session 31: Keynote Speaker** *PACAF medical operations in support of disaster relief - Col David O'Brien (USAF)*
1105-1130	Closing Presentations and AMMA Awards
1130	Morning Refreshments – Trade Exhibition Hall

SOCIAL PROGRAM

WELCOME RECEPTION

EXHIBITION AREA,
CROWN CONFERENCE CENTRE, SOUTH BANK

1800 - 2000, FRIDAY 21 OCTOBER

ADDITIONAL TICKETS - $80

A Welcome Reception will be held in the Trade Exhibition area at the Crown Conference Centre on Friday 21 October commencing at 1800. This will be a chance to catch up with colleagues after the first day and explore the trade exhibition stands further.

DRESS - NEAT CASUAL

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AMMA 20TH ANNIVERSARY CONFERENCE DINNER

MELBOURNE TOWN HALL,
SWANSTON STREET, MELBOURNE

1900 - 2330, SATURDAY 22 OCTOBER

The 20th Anniversary Conference Dinner will commence at 1900 with pre dinner drinks and canapés. This promises to be a very special evening and should not be missed.

As the Town Hall is located within walking distance of the Crown Conference Centre and other accommodation, limited buses will leave from the Crown Conference Centre, outside the registration area at 1840.

Limited buses will return from the Melbourne Town Hall to the Crown Conference Centre at 2230 and 2300.

Attendance to this event is included in the full conference registration. Additional tickets may be purchased for $160 from the registration desk.

DRESS - LOUNGE SUIT (TIE OPTIONAL), AFTER-FIVE WEAR

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KEYNOTE PRESENTATIONS

KEYNOTE SPEAKERS

MAJOR GENERAL (RETD) ANDREW JAMES (JIM) MOLAN, AO DSC

Retiring from the Australian Army in July 2008 after 40 years, Jim Molan served across a broad range of command and staff appointments in operations, training, staff and military diplomacy.

Jim has been an infantryman, an Indonesian speaker, a helicopter pilot, commander of army units from a thirty man platoon to a division of 15,000 soldiers, commander of the Australian Defence Colleges with service in East Timor in 1999 and command of the evacuation force from the Solomon Islands in 2000. In April 2004, Major General Molan deployed for a year to Iraq as the Coalition's chief of operations, during a period of continuous and intense combat. For "distinguished command and leadership in action" in Iraq, Major General Molan was awarded the Distinguished Service Cross by the Australian Government and the Legion of Merit by the United States Government.

In August 2008, General Molan published his book Running the War in Iraq, which is a double best seller. Harper Collins has now taken it into a second print, and it has been released as an E-book.

In retirement Jim is a commentator on security and military issues in the Australian print and electronic media, writes regularly for a number of journals, and is a director of a number of companies.

CONFLICT – THE BIG PICTURE

General Molan will look at the nature of conflict that faces Australia now and that likely faces Australia in the future, with the intention of clarifying scenarios for the delivery of ADF health care on the battlefield. He will consider Australian conflict situations as either Wars of Choice or Wars of Necessity and will discuss the characteristics of each. He will look at the consequences on a military of preparation for and participation in Wars of Choice on the ability of that military to conduct a War of Necessity at some time in the next 5 to 30 years.

JAMES M RYAN

OSTJ MB BCH BAO MCH FRCS DMCC, HON FCEM, COL L/RAMC (V)

EMERITUS PROFESSOR UCL & SGUL & INTERNATIONAL PROFESSOR OF SURGERY, USUHS

Professor Ryan was the first Leonard Cheshire Professor in Conflict Recovery at the Department of Surgery, University College London, serving in that capacity from 1995 until 2007. He was also visiting Professor in trauma care at University College London Hospitals. In 2002 he was appointed International Professor of Surgery at the United Services University for the Health Sciences in Maryland, USA. In 2007 he was further appointed Emeritus Professor to the newly established Centre for Trauma, Conflict & Catastrophe Medicine at St George's University of London. He is tasked with advising on the establishment and evolution of the new Centre at SGUL.

Prior to coming to UCL in 1994, Professor Ryan was Joint Professor of Military Surgery at the Royal Army Medical College, London and the Royal College of Surgeons of England. His war and disaster medical experience covers military and humanitarian operations in Northern Ireland, Cyprus, The Falkland Islands, Nepal, the Balkans, the Caucasus, the Middle East and Central Asia. He remains active in the Territorial Army and is a senior member of the Training Faculty based at HQ AMS TA in York. He was also Convenor for the 'Diploma of the Medical care in Catastrophes' at the Society of Apothecaries in London. He is now the President of the Conflict & Catastrophe Faculty at the Society. He is immediate past President of the Catastrophe and Conflict Forum at the RSM.

His interests are in the fields of ballistic injury, terrorist injury, and military and conflict medicine.

FROM THE FALKLANDS TO AFGHANISTAN AND BEYOND – WHAT HAVE WE LEARNT?

The period 1982 – 2011 covers nearly 30 years during which there has been exponential growth and global spread of war and conflict.

This paper begins by reviewing the Falklands war of April – June 1982. Although not recognised at the time the war was to be a watershed, at least in medical terms. The Navy and Army deployed teams were lightly equipped, lean and austere and would have been easily recognised by an earlier generation of military surgeons working in field medical facilities during the Boer war, World Wars I and II.

KEYNOTE SPEAKERS

Although an unplanned and unexpected event military medical planners applied conventional NATO doctrine which had evolved to provide medical support for full-scale conventional (and possibly nuclear) warfare in Central Europe. The Falklands war was outside planning and the medical support provided was largely planned on the hoof, particularly following the loss of the Atlantic Conveyor carrying most of the field hospital equipment and support helicopters.

What was learnt as a result of this war? I guess the most important lesson was that to impact on morbidity and mortality it is necessary for early access to the casualty, field stabilisation and rapid evacuation to resuscitation and surgery placed as close as tactically possible to the point of wounding. Early access and evacuation was usually not possible during night battles in mountainous terrain and there were no dedicated support helicopters. The result was late evacuation to resus and surgery resulting in very few of the severely injured reaching field surgery alive (Chest, Abdomen and Head) which led to a very low hospital mortality, but with a high pre-hospital mortality. This paradox was not immediately recognised leading to an exaggerated view of the excellence of medical care. The message is – you must have means to access casualties early, provide high quality trauma life support and apply accurate triage resulting in evacuation rearward by priority.

A further lesson was that a conventional medical doctrine for a war in Europe would not fit modern expeditionary warfare.

This has led to a gradual evolution in thinking over the following decades forged in a wide variety of operational setting in such far-flung places as the Northern Ireland, Balkans, Sierra Leone and the first Gulf war. This process reached its apogee during the recent war in Iraq and currently in Afghanistan.

The main emphasis in this paper is the standard of care that has been evolved in the British led international Coalition Field Hospital in Camp Bastion, Helmland Province, Afghanistan.

The paper will examine the changes that have taken place over the last 10 years under three main headings:

Doctrine, Preparation and Training

Clinical care and support, including MERT, Damage control resuscitation, Damage control surgery, Field Intensive Care and Evacuation in a airborne critical care environment, and finally, on going care in UK, including rehabilitation

Governance, Data capture, Audit & Research

The paper will show that it is all of the above in concert that has brought about a sea change in outcome for our wounded.

The paper will conclude with a peep into the future.

DAVID O'BRIEN

COL DAVID O'BRIEN, USAF, MC, CFS. 13TH AIR FORCE COMMAND SURGEON

Colonel David M. O'Brien is assigned as the Command Surgeon, 13th Air Force, Joint Base Pearl Harbor - Hickam, HI. Colonel O'Brien serves as the senior medical advisor to the Commander, 13th Air Force and executes Air Force medical operations for the Pacific theater. In this capacity he provides medical contingency planning, medical OPLAN support, and medical Theater Security Cooperation engagement for the Pacific Air Forces. Additionally, Colonel O'Brien directs plans, policies and programs for the Theater Patient Movement Center-Pacific, validating joint patient movement and enabling 24/7/365 aeromedical evacuation for the U.S. Pacific Command Area of Responsibility.

Colonel O'Brien received his Bachelor of Science Degree in Biology from Loyola Marymount University and holds a Doctor of Medicine Degree from Stritch School of Medicine, Loyola University of Chicago. He completed residencies and is board certified in Aerospace Medicine and Occupational Medicine at, Brooks Air Force Base, Texas. Colonel O'Brien is a fellow of the Aerospace Medicine Association and a Certified Physician Executive.

Colonel O'Brien is a chief flight surgeon and has over 1,500 flying hours.

Medical operations in the Pacific theater of operations are challenged by the tyranny of distance, variability of available healthcare and finite resources. 13th AF, the operational arm of the USAF Pacific Air Forces Command, has implemented several unique Department of Defense solutions to ensure timely patient care and humanitarian assistance.

This presentation will describe two programs, Joint Medical Air Transport Teams (JMATT) and the Humanitarian Assistance Rapid Response Team (HARRT).

NOTES

GENERAL INFORMATION

SYMPOSIUM AND GENERAL INFORMATION

ACCOMMODATION

If you have any queries relating to your accommodation booking, please see the staff at the registration desk, or alternatively the staff at your hotel.

Your credit card details have been transferred to the hotel you have selected – please confirm this on check in with your hotel. If you have arrived 24 hours later than your indicated arrival day you may find that you have forfeited your deposit.

ADDITIONAL TICKETS: CONFERENCE SOCIAL PROGRAM

The Welcome Reception and Conference Dinner are included in each full conference registration. Additional tickets for these two events may still be available at a cost of $80 for the Welcome Reception and $160 for the Conference Dinner.

AMMA ANNUAL GENERAL MEETING

The AMMA General Meeting will be held in CH1 (Plenary) at 1630 on Saturday 22 October.

AMMA ANNUAL AWARDS

WEARY DUNLOP AWARD - $750

The Australian Military Medicine Association is committed to supporting military medicine, and as a result, present the Weary Dunlop Award for the best original presentation given at the annual Conference. The award is open to all presenters at the Conference and is named in honour of Sir Edward “Weary” Dunlop, who passed away in 1993.

The award prize is $750 and publication of the paper in the association’s journal Journal of Military and Veterans’ Health. It is open to all presenters, whether or not they are members of AMMA and must be an original presentation to which they have intellectual property rights.

PATRON’S PRIZE - $250

The Patron’s Prize will be awarded to the AMMA Member with the best article published in a peer reviewed journal. It must be a health related article and published within the past financial year (1 July 2010 – 30 June 2011).

JOURNAL EDITOR’S PRIZE - $750

The award for the best paper published in the Journal of Military and Veterans’ Health within a 12 month period will be judged and presented by the Chief Editor.

JMVH NEW AUTHOR PRIZE - $500

The award for the best paper published within a 12 month period by an author who has not previously published in the Journal of Military and Veterans’ Health will be judged and presented by the Chief Editor.

JMVH – BEST VETERAN PAPER - $1500

sponsored by Foundation Daw Park

The Veterans Paper Prize is awarded by the Editorial Board of The Journal of Military and Veterans’ Health for the best original paper on veterans' health published in each volume of the Journal (constituting the issues published in each financial year). The Editorial Board will determine the criteria and method for determining the award of the Prize.

An original paper is one that is published in any of the following Sections of JMVH:

Original Papers; Short Communications; Case Studies; Review Articles; History.

Membership of the Association is not a requirement for the granting of the Award.

AMMA MERCHANDISE

AMMA Merchandise will be available for purchase at the Conference Registration desk. Items for sale include caps, mugs, pens, polo shirts and jackets. New items for sale include cuff links and ties.

BANKING

Banking hours in Melbourne are Monday to Friday 0930 - 1600. Banks are closed on weekends. There are ATMs to be found throughout the conference centre. Delegates are advised that as these ATMs are located in a gaming venue a limit of $500 per card in a 24 hour period applies.

CATERING

All catering will be served within the Trade Exhibition area located in the Exhibition Hall.

CONFERENCE NAME BADGES

All delegates and exhibitors will be provided with a name badge, which must be worn at all times within the conference venue. Your name badge will give you access to all events that are part of your registration or that you have purchased.

DISCLAIMER

The 2011 AMMA Anniversary Conference reserves the right to amend or alter any advertised details relating to dates, program and speakers if necessary, without notice, as a result of circumstances beyond their control. All attempts have been made to keep any changes to an absolute minimum.

DRESS CODE

The AMMA Conference is a civilian event and therefore military dress is not compulsory. Dress throughout the day is smart casual along with the Welcome Reception. The Conference Dinner is formal, after five wear is appropriate with jacket (tie optional) for men.

INTERNET CAFE

There will be an internet café and wi-fi access available throughout the conference. This is a free service; however we ask that you limit your time to 10 minutes per session, during peak times.

IPAD APPLICATION

This year there will be an I-App available as a trial. It will be available for those delegates who wish to use it on their own i-pad. The App can be downloaded from the APP Store. The name is AMMA2011. Password for access if AMMA-2011

MOBILE PHONES AND PAGERS

As a courtesy to other delegates, please ensure that all mobile phones and pagers are turned off or are in silent mode during all sessions and social functions.

PARKING

Complimentary parking is available to non residential guests in the multideck car park only. Delegates must bring their casual parking ticket to registration and a Crown staff member will validate it. Validation will be available at morning tea.

SYMPOSIUM AND GENERAL INFORMATION

POSTER PRESENTATION

Staff at the Registration Desk will direct you to the display boards. Please use strong double sided tape or both sides of the Velcro to hang the poster. Poster defence will be on Saturday at Lunch 1205-1300 and authors are required to be at their poster for this session.

SMOKING

The Crown Conference Centre is a non smoking area.

SPEAKERS

Speakers are asked to load their presentations onto the conference laptop in the Speakers Prep Room AT LEAST three hours before they are due to present – this may mean the day before your presentation. An audio visual technician will be available throughout the conference. Please see the Registration Desk for further information.

SPEAKERS PREPARATION ROOM

The Speakers Preparation room is located next to Meeting Room 16 on Level 1 of the Conference Centre. Computer and audio visual equipment is available for speakers wishing to review or change their presentations. The Speakers Preparation Room will be open at the same times as the Registration Desk.

SPECIAL DIETS

The Crown Conference Centre has been advised of any special diet preferences you have indicated on your registration form. Please indicate this to the catering staff - they will be happy to assist in providing you with your appropriate food.

RACGP

A request to the RACGP for the program to be endorsed and provided with Category 2 Points is currently awaiting confirmation. RACGP members wishing to receive points should collect a form from the Registration Desk.

RCNA

This conference has been endorsed by Royal College of Nursing, Australia, according to approved criteria. Attendance attracts 12.5 RCNA Continuing Nurse Education (CNE) points as part of RCNA's Life Long Learning Program (3LP)

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acrrm Australian College of Rural and Remote Medicine

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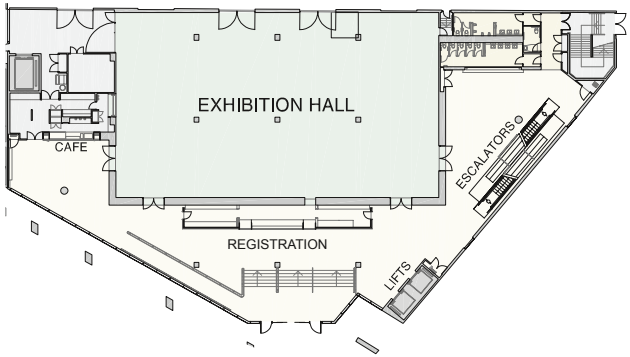

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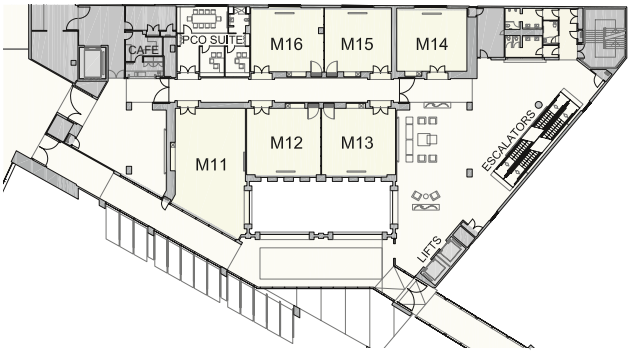

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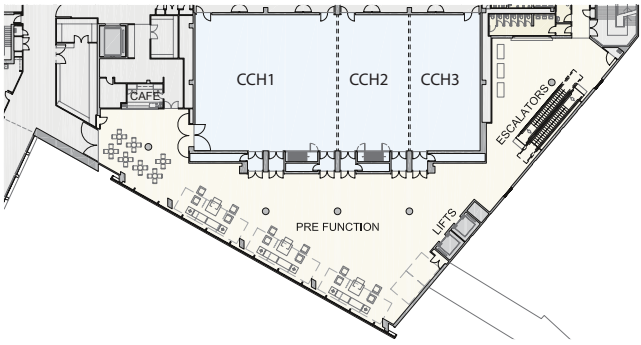

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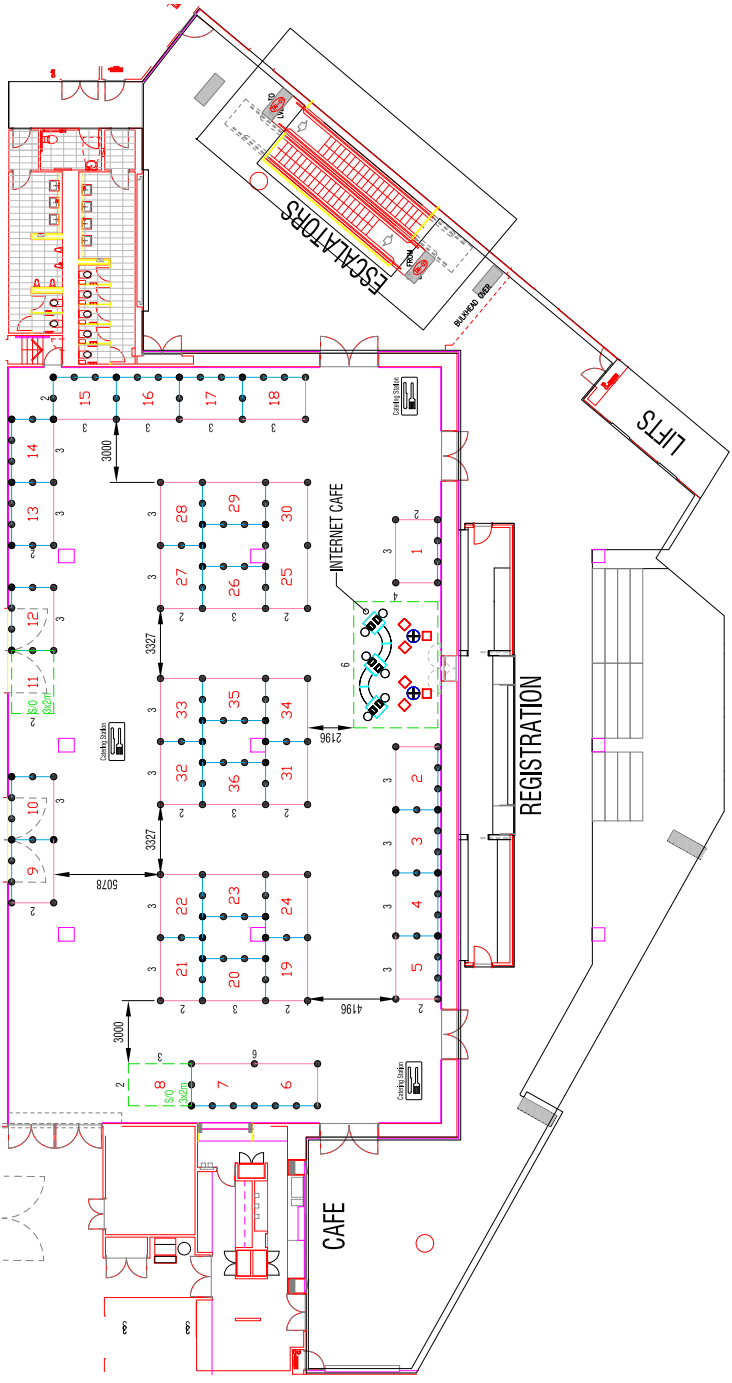

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Sales and Marketing Manager
The Critical Assist Group

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Vision
Optimise mental health and wellbeing of ADF members and their families.

Mission
To provide policy, programs and systems that strengthen resilience and enhance recovery.

Branch Structure
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NOTES

ABSTRACT PRESENTATIONS

ABSTRACTS Session 2: Middle East Area Operations Health Study

ANNETTE DOBSON, KEITH HORSLEY, CAROL DAVY, WU YI ZHENG, MICHAEL WALLER, SUSAN TRELOAR, MARIA ABRAHAM, JEEVA KANESARAJAH, DEREK BROWNE, COLLEEN LOOS

Professor Annette Dobson is Professor of Biostatistics in the School of Population Health at the University of Queensland. She has a joint position in the Centre for Military and Veterans' Health at the University of Queensland. Her main role in CMVH is as Principal Investigator for the Middle East Area of Operations Deployment Health Surveillance Program (DHSP).

Background: The Military Health Outcomes Program (MilHOP) comprises two major studies that commenced data collection in 2010 and are being funded by the Department of Defence. These are the Middle East Area of Operations (MEAO) Health Study and the Health and Wellbeing/ Mental Health Prevalence Study. This Symposium presents some early findings from the MEAO Health Study.

Aims: MilHOP aims to better understand the physical, mental and social well-being of ADF members in order to enhance the future health support systems. The specific objectives of the MEAO Health Study include identifying links between exposures encountered during MEAO deployment and physical and psychological health outcomes.

Methods: The MEAO Health Study includes three sub-studies: a Prospective Study, a Census Study and a Mortality and Cancer Incidence study. The Prospective Study is measuring changes in health outcomes between pre- and post-deployment and aims to identify associated risk and resilience factors. Personnel deploying to the MEAO after June 2010 and returning by early 2012 are invited to complete a questionnaire approximately three months before and then again four months after returning from deployment. At both times, approximately 750 of the deploying personnel will also take part in a brief physical assessment and provide saliva and blood samples, while approximately 400 will undertake a neurocognitive assessment.

The MEAO Census Health Study involves a cross-sectional survey of all serving and ex-serving ADF members who deployed to the Middle East Area of Operations (MEAO) between 1 October 2001 and 31 December 2009. A nominal roll of around 27,000 serving and ex-serving members has been compiled. The MEAO Census study will complete data collection at the end of 2011 so only early results are presented in this Symposium. The Mortality and Cancer Incidence Study will analyse data from the National Death Index and the National Cancer Statistics Clearing House relating to any personnel who deployed to the MEAO.

Results: This Symposium comprises six papers relating to the Prospective and Census studies:

1. Prof. Annette Dobson introduces the MEAO Health Study design and summarises the key research questions;
2. Dr. Carol Davy presents baseline results from questionnaire component of the Prospective Study;
3. Dr Carol Davy presents baseline results from Prospective Study neurocognitive testing;

4. Dr. Keith Horsley presents early findings from Prospective Study blood testing including indications of exposures to infection such as Helicobacter pylori and environmental toxins;
5. Dr. Wu Yi Zheng presents indicative findings on reported protective factors for health amongst those who had deployed to the MEAO from the Census Study;
6. Michael Waller presents aspects of reported combat exposure from the Census Study.

Conclusions: The MEAO Health Study will deliver the major findings to Defence in June 2012. Information on MEAO deployment-related morbidity could lead to early intervention and program change to improve health and minimise disability amongst serving and ex-serving ADF members. Longer term follow-up of the cohorts will be important.

Key Words: Post-deployment health, Australian Defence Force, prospective, cohort, physical, psychological, neurocognitive, exposures, health outcomes

TRAINING HEALTH PERSONNEL FOR DISASTER HUMANITARIAN RESPONSES; THE POWER OF IMMERSION

DR IAN NORTON

Dr Norton is a Director, Disaster Preparedness & Response, National critical Care and Trauma Response Centre, Emergency Physician. Clinical experience in South India and Indonesia, postgraduate qualifications in tropical medicine and international health and in surgery as well as being a specialist in emergency medicine. Team leader Ashmore Reef boat explosion 2009 and AusMAT team leader Pakistan August-October 2010. Involved with development and delivery of national AusMAT specialist training courses, AusMAT equipment, uniforms fitness and heat research. Research interests in mass casualty and humanitarian triage and tracking systems, heat illness and national surge capacity mapping.

Introduction: Australian Medical Assistance Teams (AusMAT) is in the final stages of being standardised across Australia. Various papers and forums have found returning civilian responders to deployments to the Indian Ocean Tsunami and the Javanese earthquake, and more recently the Samoan tsunami response, described little relevant humanitarian and disaster response teaching undertaken prior to deployment. Candidates interviewed where almost universal in their calls for specific teaching prior to deployment. Many of the civilian members of JTF 636 Op. Pakistan Assist, had undergone training in the NT. There are increasing calls world wide, particularly after the Haiti response, to end the deployment of untrained medical staff into disaster zones. The WHO has set up a world wide working group to begin registering international medical response teams, with a secondary outcome of mandatory reporting of results and outcomes soon to follow.

Discussion: The National Critical Care and Trauma Response (NCCTRC) have undertaken work in this area, culminating in the finalising of a textbook for AusMAT deployees, and in several courses aimed various AusMAT craft groups. All courses are specifically aimed at operational readiness, and are intensive and challenging. All involve an overnight deployment, after an immersion field exercise.

Courses include a team member AusMAT course designed to teach basic humanitarian practice, and safety and security skills commensurate with similar courses designed pre-deployment with medical NGOs. Presently the NCCTRC (Northern Territory), WA and SA are the only states and territories providing such a course.

Specialist level courses are only delivered at the NCCTRC, using visiting experts from across the world, as well as local and national staff. The first is aimed at the Team Leader level, teaching high level humanitarian and developing world negotiation, team leadership skills, and an in depth operational guide to practical humanitarian practice as a team leader. Team leaders are also trained as needs assessors, and undergo intensive media training, as well as environmental health and safety and security risk mitigation awareness. This group have a particularly intensive immersion training exercise, and

the course has had good participation from full time ADF, reservists and senior civilian medical staff, as well as AusGOV representatives from EMA, DoHA and AusAID.

Surgeons and Anaesthetists are offered a separate course, teaching the specifics of disaster surgery. The course has been facilitated by Dr. Chris Giannou, retired surgeon general ICRC, and includes an ethically approved live tissue "simulated" theatre. Surgeons are required to work as a team, organising the logistics of an austere surgical field hospital set-up, before operating under supervision of Dr. Giannou for many hours. ADF reserve specialists are heavily involved in the course as participants and instructors.

Further courses for medical logistics and Environmental health responders to disaster will follow in 2012, as well as multiple repeats of team and specialist courses described above

Conclusion: Immersion courses allow assessment of candidates under stressful conditions, and provide a useful learning tool, as well as an opportunity to fully understand the risks and stresses of deployment post disaster, prior to volunteering for international deployment with an AusMAT. The author would suggest no AusMAT member should deploy without appropriate training in the future.

Key Words: Disaster, humanitarian, AusMAT, training, immersion

THE CANBERRA CLASS LHDS: A NEW MARITIME ROLE 2 ENHANCED CAPABILITY FOR THE AUSTRALIAN DEFENCE FORCE

NEIL WESTPHALEN

Neil graduated from Adelaide University in 1985, and entered the RAN in 1987. His seagoing service includes SWAN, STALWART, SUCCESS, SYDNEY and PERTH, while that ashore includes CERBERUS, PENGUIN, KUTTABUL, ALBATROSS and STIRLING. He participated in Exercises RIMPAC 96, and TALISMAN SABRE 07, and in operational deployments to the Northern Red Sea, East Timor. Op RELEX II and chasing Patagonian toothfish. Neil has fellowships in occupational medicine and general practice, a Master of Public Health and a Diploma of Aviation Medicine. He is also a graduate of the RAN Staff College. He moved to Canberra as the Director Navy Occupational and Environmental Health in Jan 09, and took over as Director Navy Health on 27 September 2010.

This presentation will describe the medical aspects of the two CANBERRA class Landing Helicopter Dock (LHD) ships, now under construction in Ferrol Spain, and in Melbourne Australia. It will provide an overview of the ships themselves, and some of the related Navy Health personnel issues.

Key Words: Operational Health Support, Maritime Role 2 Enhanced

TOWARD VALIDATION OF TIRI AS A NEXT GENERATION DEPLOYABLE HEALTH SYSTEM

DANIEL TJ ARTHUR, MASOOD M KHAN

Daniel is a PhD student in Mechanical Engineering at Curtin University, Perth, WA addressing medical applications of thermal infrared imaging. He conducted a 3 month clinical study into application of TIRI to detection / staging of osseous stress pathophysiology at Kapooka Health centre under ADHREC protocol 592-10. He is Currently working on powerful medical image processing techniques at the iVEC supercomputing facility in Perth, WA. Specifically addressing optical flow in longitudinal TIRI data, and registration of 2D TIRI data to 3D MRI models. MRI acquisition supported by Fremantle Hospital Radiology, TIRI acquisition supported by FLIR Systems Australia. He is supervised by Dr Masood Mehmood Khan

This paper was prepared with a view to objective demonstration of the applicability of TIRI to researchers and practitioners within all operating systems within ADF Health capability, and facilitation of timely deployment as an electronic decision support system. This work falls in line with the third and current phase of the DMO's Joint Project 2060, and the current CMVH research initiative addressing the acquisition and introduction of new health technologies that enhance deployable health capability. Diagnostic imaging has been a focus area, with Phase 2A and Block 1 seeing the introduction of portable ultrasound and digital X-ray systems, in addition to compatible controlled-environment soft shelters, as would be required for TIRI deployment. Thermal infrared imaging (TIRI) systems employ a focal plane array (FPA) with associated optics and optoelectronics to remotely detect and topographically map thermal emittance. The past decade has seen significant advancements in TIRI technology yielding 3rd generation FPA's, with corresponding improvements in associated optics and optoelectronics making it feasible to explore demanding biometric applications, exemplified by the U.S DoD's DARPA HID programme. The fundamental relationship between tissue temperature and physiological state has drawn more recent research attention to TIRI as a non-invasive, non-ionising, portable, inexpensive, passive physiological imaging modality. Despite defence demonstrated air-worthiness and TGA certification of TIRI systems as Medical Devices (GMDN 17888), insufficient understanding of the specific physical mechanisms of in-vivo human tissue emittance has precluded deployment. Elucidation of the specific physical mechanism via which thermal emission arises from human anatomy in-vivo requires empirical investigation under objective clinical protocols. This paper pragmatically characterizes the fundamental architecture of the clinical TIRI system with a view to facilitation of objective protocol development, elucidation of the mechanism/s of human thermal infrared emittance, and eventual validation of TIRI as a deployable diagnostic medical tool. The top-level architecture quantitatively characterises the salient system entities in terms of; human tissue volumes as complex thermodynamic graybody composites exhibiting inherent

bioheat transfer) within characteristic physiological parameter range; the ambient atmosphere as a transmissive optical medium (Fig. 3), source of infrared noise, and set of thermophysiological stimuli/ inputs affecting both FPA performance and the human tissue and the imaging system as an optoelectronic detector characterised by the noise performance of it's background-limited FPA. The authors' current investigation into a novel bioheat transfer modelling approach is alluded to, with emphasis placed upon inclusion of algorithmic arguments to accurately account for the dominant processes involved in arterial transport phenomena such as Staverman filtration and osmotic reflection coefficients, and the optical properties germane to infrared tissue interrogation.

Key Words: Diagnostic Imaging; Deployable Health Systems; Health Surveillance; Infrared Imaging

REAL TIME HANDHELD ELECTRONIC TRACKING DEVICE FOR MASS CASUALTY INCIDENTS

CHARLES BLUNDELL, IAN NORTON

Charles is the Manager of IT & Communications for the National Critical Care & Trauma Response Centre (NCCTRC). He has a background in Operational and Business management and this experience compliments his broad experience and expertise with developing and implementing technology. His current projects are primarily disaster medicine related, with a heavy skew towards AusMAT projects (Australian Medical Assistance Teams). Projects include: the development of the National Database for the management and deployment internationally of AusMAT Volunteers, planning and development of the WebEOC Disaster Management System for Northern Territory Government Health Department & the NCCTRC, development of a AusMAT WEB Simulator which is utilised for highly immersive training courses, and development of a Disaster Mass Casualty Barcode Scanner System.

Introduction: During a Mass Casualty Incident (MCI) or Disaster, sharing key information about the size, location and scale of an event is crucial to accurately resource the scene with sufficient medical personal and assets. It also allows effective prioritisation with concurrent events, and helps to determine the escalation path to be taken. From the scene, information about patient numbers and their triage categories are time critical. Historically this information has been collated at the scene before a sitrep is provided to central command resulting in time delays and human error.

The National Critical Care and Trauma Response Centre (NCCTRC) has created a ruggedized handheld Electronic Disaster Management Device to assist in the sharing of this and patient data from the scene of a Mass Casualty Incident or Disaster - in real time. The Device has been successful in proof-of-concept trials in the field, and work is now ongoing to further develop the system to enhance its capabilities and make it more applicable for a wider range of uses and user groups.

Discussion: Device/System
The system is composed of 2 core parts. Part 1 is the Handheld Device & Software – The physical device was selected for its

ability to operate in rugged, wet, and dusty conditions. The software developed for the device focused heavily on providing a fast and intuitive interface for users. The software allows an operator to capture the unique identifier of the patient using a barcode from their triage tag, their current triage severity, and their location before transmit. It has a range of flexibility and failsafe mechanisms built in to ensure safe handling of any data collected. Part 2 is the Server Component – This software was developed to both receive data from the handhelds and allow secure viewing of the data via the internet.

Proof-of-Concept:
In April 2010 a proof-of-concept trial was undertaken in conjunction with a Police, USAR & Fire training event simulating a shopping centre collapse with mass casualties. The event ran for approximately 5 Hours, and the devices were operated in conjunction with traditional reporting methods, to allow for objective comparison between the two methods. Both collecting groups were blinded to the others data. Statistically significant differences in time to reporting were recorded.

Scans using the devices took an average time of 6 seconds. Incident commanders were able to access real time statistics (number of patients, triage category and location) from the scene via the server's website, with data refreshed every 10 seconds. Throughout the Day the website & devices operated successfully without any errors. The server also simultaneously sent emails and SMS updates to nominated contacts. The manual collection methods on the ground were less successful, as it took 20 minutes before the first collated report was sent to command, and this was then inaccurate 'losing' 2 patients. The process was inefficient, linear, subject to human error and, required a person recording data at base in addition to the operational team in the field.

Conclusion: The trials have proven the system to be timely, accurate, and efficient in its transmission of crucial information during an MCI. Further development work is ongoing to expand the uses of the device to include areas including Disaster Victim Identification, national registration during evacuations (NRIS), MCI, overseas repatriation & remote retrieval incident.

Key Words: Mass Casualty Incident, Disaster, Real Time, Tracking, NRIS

EVALUATION OF HUMAN CENTRIFUGE TRAINING FOR FAST JET AIRCREW

GLENN D PASCOE, GV HAMPSON, B OPPERMANN

GCDR (RAAFSR) Glenn Pascoe, MBBS, FRACGP, DAvMed (UK), is a senior aviation medical officer currently contracted to Navy as the Senior Medical Advisor AVMED. He is also posted to a Reserve position at the RAAF Institute of Aviation Medicine. Glenn joined the RAAF as an undergraduate whilst studying medicine at UQ. He served in the PAF with postings to RAAF Pearce; RAAF Amberley; RAF Center of Aviation Medicine, and the RAAF Institute of Aviation Medicine. Glenn has deployed to Bougainville, East Timor and the MEAO

This study aimed to evaluate the subjective and objective effectiveness of centrifuge training for Royal Australian Air Force (RAAF) fast jet aircrew. Currently Australian Defence Force (ADF) aircrew do not undergo centrifuge training as a matter of routine. The study sought questionnaire responses from operational RAAF F/A-18 pilots who were panelled on an opportunity basis to undertake centrifuge training in conjunction with an overseas exercise.

Questionnaires were administered before and after the conduct of centrifuge training to assess attitudes regarding the benefits of such training to both the individual, and to the wider ADF aircrew population. Prior to receiving any additional centrifuge or anti-G straining manoeuvre (AGSM) training, the study participants were asked to use their usual methods of avoiding G-LOC during the initial baseline G-tolerance centrifuge profile. Objective analysis of an individual pilot's +Gz tolerance before standard centrifuge and AGSM training was made by a medical observer from the RAAF Institute of Aviation Medicine (AVMED). The pilots were then put through standard AGSM and centrifuge training. The pilot's subsequent +Gz tolerance and AGSM effectiveness was compared to their pre-training baseline

Following formal AGSM training, there was an improvement in AGSM technique. There was a small improvement in the perceived value of centrifuge training after it was conducted, although the pre-training responses were already quite positive. The majority of participants felt the most useful point in the pilot training curriculum to conduct centrifuge training would be prior to the lead-in-fighter training, with a refresher frequency of 3 years.

The changes to G tolerance observed are desirable outcomes of centrifuge training and indicate an improvement in AGSM technique in an otherwise fully trained cohort of operational fast jet pilots. The results of this study support the introduction of routine human centrifuge training for ADF fast jet aircrew.

Key Words: Centrifuge, training, human performance

PHYSIOLOGICAL EQUIVALENCE OF HYPOXIA PRODUCED BY HYPOBARIC, NORMOBARIC, AND COMBINED ALTITUDE/ DEPLETED-OXYGEN (CADO) CONDITIONS

ADRIAN SMITH, BHUPINDER SINGH

Dr Adrian Smith is an aviation medicine specialist contracted to support Army Aviation operations through the RAAF Institute of Aviation Medicine. He completed his Diploma in Aviation Medicine (UK) in 2001, Masters of Aerospace

Medicine with Honours in 2006, and is currently completing his doctoral thesis. He is a Member of the International Academy of Aviation and Space Medicine, and a Fellow of the Royal Aeronautical Society

Background: Although hypoxia awareness training has traditionally been conducted in a hypobaric chamber at a pressure altitude of 25,000 ft, there are today many air forces and civilian training facilities that offer hypoxia awareness training using normobaric gas-mix and combined altitude/depleted-oxygen (CADO) techniques. Even though these different techniques should be physiologically equivalent, some studies have reported that the different forms of hypoxia can produce different symptom complexes.

Purpose: The purpose of this study was to measure end-tidal oxygen tension in an attempt to determine the extent to which the different methods of producing hypoxia are physiologically equivalent.

Method: Four subjects were exposed to each of four conditions for up to five minutes – hypobaric hypoxia at 25,000 ft, normobaric hypoxia breathing a 6% gas mix at mean sea level, and CADO at 10,000 ft breathing gas mixtures of 10% and 9% oxygen. End tidal oxygen was monitored.

Results: After 240 seconds, all methods of hypoxia produced a similar end-tidal oxygen tension (31±3 mmHg); however, significant differences in end-tidal oxygen tension were demonstrated during the first 240 seconds of hypoxia. Compared to hypobaric hypoxia, the end-tidal oxygen tension during normobaric hypoxia was 43-55 mmHg higher for the first 180 sec, and the end-tidal oxygen tension during the 10% CADO run was 39-47 mmHg greater for the first 60 sec. The 9% CADO condition produced a results very similar to hypobaric hypoxia, and was not more than 16 mmHg higher than hypobaric hypoxia at any stage.

Conclusion: Significant differences exist in the end-tidal oxygen tension profile between the different forms of producing hypoxia, especially during the first 3 minutes when much of the hypoxia awareness training occurs.

Key Words: Hypoxia training, altitude physiology, MECR, Medical Employment Classification Review, grounding, aircrew

THERAPEUTIC INTRAOCULAR GAS. WHEN IS IT SAFE TO FLY?

KYLIE HALL

Therapeutic Intraocular gases, such as Perfluorpropane (C3F8), Sulphur Hexafluoride (SF6) and filtered air are routinely used in Retinal Surgery - in particular Retinopexy - for repair of retinal detachment.

Significant controversy exists concerning the safety and timing of flying for postoperative patients. Conservative opinions prohibit any flight (or more specifically, any altitude changes) until all the gas is reabsorbed, whilst others maintain air travel can be undertaken in specific, limited circumstances.

This article reviews the issues of significant intraocular complications arising from Therapeutic Intraocular gas bubbles.

THE CONTINUUM OF COMBAT CASUALTY CARE ON THE MODERN ASYMMETRIC BATTLEFIELD FROM CARE UNDER FIRE THROUGH TO THE DAMAGE CONTROL RESUSCITATION AND SURGERY OF TACTICAL ABBREVIATED SURGICAL CONTROL

MAJ MARTIN GRAVES, MAJ ANTHONY CHAMBERS, SGT NATHAN GRUMLEY

AJ Martin Graves is a Medical Officer within SOCOMD. He has served for 10 years in uniform within the ARA including RMO of 3 RAR, 4 RAR(Cdo), and SASR. He has deployed twice to East Timor with 3 RAR and 3 times to Afghanistan with the Special Forces Task Group. He is an Anaesthetic Fellow at Saint George Hospital in Sydney

MAJ Anthony Chambers is a Medical Officer within SOCOMD. He has been a member of the Army Reserve for fifteen years and has seen service in East Timor, Afghanistan, Bougainville, Banda Ache and Iraq. He has completed a fellowship in Oncological Surgery at The University of Calvary in Canada and Trauma Surgery at The Alfred Hospital Melbourne and is currently a Consultant of General and Trauma Surgery at Saint Vincent's Hospital Sydney.

SGT Grumley is an Underwater Medical Technician within SOCOMD. He has deployed to East Timor and Afghanistan as a Commando Platoon Kilo, as well as a SGT within the Special Operations Task Group Resus team. He has also been involved with the tactical and live tissue training for medics and Commandos deploying to Afghanistan. He has just returned from his third tour of operations in Afghanistan.

Modern Concepts in care of the Battle casualty from Pre-hospital "Care Under Fire" and "Tactical Field Care" through to "Tactical Abbreviated Surgical Control" and ongoing resuscitation of the casualty.

War has always been good for medical developments and the Global War on Terror is no different with huge advances being made on the resuscitation and treatment of penetrating and blast trauma in Battle casualties. Evidence gathered on the care of patients during Coalition deployments to Iraq and Afghanistan has shown us that we require a paradigm shift in all areas of treatment from pre-hospital care through to the anaesthetic, surgical and intensive care phases in the management of the combat trauma casualty.

The session will be divided up into the pre-hospital management of the casualty from initial stabilization during "Care Under Fire" and "Tactical Field Care", through to the level 2 and 3 based techniques of "Damage Control Resuscitation" and "Damage Control Surgery". Presenters will discuss the techniques involved for "Combat Casualty Care" along with the Anaesthetic, Surgical, and Critical Care management during "Tactical Abbreviated Surgical Control".

The Pre-Hospital phase will deal with the shift from ATLS teaching to Tactical Field Care guidelines. The speaker will deal with novel methods of "keeping the blood in", along with issues of casualty treatment whilst "Winning the Firefight".

In the second part of the session the speaker will deal with the anaesthetic considerations for Tactical Abbreviated Surgical Control, including fluid resuscitation and transfusion.

The third part will delve into the surgical concepts and practicalities of Tactical Abbreviated Surgical Control including haemostasis, limiting contamination, therapeutic packing and temporary closure.

The final part is dedicated to the critical care resuscitation of the casualty between initial surgery and planned reoperation, including methods of combating the lethal triad of coagulopathy, hypothermia and acidosis.

Key Words: Care Under Fire, Tactical Field Care, Damage Control Resuscitation, Damage Control Surgery, Tactical Abbreviated Surgical Control

AN EPIDEMIOLOGICAL STUDY OF MENTAL HEALTH IN SERVING AUSTRALIAN DEFENCE FORCE PERSONNEL: THE MENTAL HEALTH PREVALENCE STUDY

PROF ALEXANDER MCFARLANE, HODSON S, VAN HOOFF M, VERHAGEN A, STEELE N, BENASSI H

Professor Alexander McFarlane currently the Head of the University of Adelaide Centre for Traumatic Stress Studies and is chief investigator on the Mental Health Prevalence Study. He qualified in Medicine in 1976 with Honours and completed his specialist training in Psychiatry in 1980. In 1990 he was awarded the degree of Doctor of Medicine based on his longitudinal research into the aftermath of the Ash Wednesday Bushfires in South Australia. Subsequently he became an international expert in the field of the impact of disasters and posttraumatic stress disorder (PTSD). He has published over 250 articles and chapters in various refereed journals and has co-edited three books. He currently holds the rank of Group Captain in the RAAF specialist reserve. In 2011 he received the Officer of the Order of Australia award in the Australia Day Honours List. The award recognises outstanding contributions to medical research in the field of psychiatry, particularly posttraumatic stress disorders, to veterans' mental health management, and as an author.

In 2009 a major mental health review of the Australian Defence Force, the Dunt Review, recommended that a mental health prevalence study be conducted. At the time of this recommendation, a separate research program focusing on the veterans of the Middle East Area of Operations of which there are 26,000 Australian veterans was being planned for 2010. This study provided a unique collaborative opportunity to survey all currently serving personnel in order to make prevalence estimates across the entire ADF. This presentation will describe the range of risk factor and exposure variables that were assessed as well as the range of psychometric measures that were administered as part of the Mental Health Prevalence Study. A response rate of 48.9% for the entire sample was obtained representing approximately 24,481 individuals of a possible 50,049. Unlike most other epidemiological research, background demographic and psychometric information is available on the entire population, which allows estimations of the response biases created by such a return rate. The method of addressing the representativeness of the sample will be discussed.

Key Words: Epidemiology, Mental Health, Prevalence, Australian Defence Force, Methodology

THE CHALLENGE OF MAKING ACCURATE EPIDEMIOLOGICAL ESTIMATES IN DEFENCE POPULATIONS: THE MENTAL HEALTH PREVALENCE STUDY

DR MIRANDA VAN HOOF, MCFARLANE A, HODSON S, VERHAGEN A, STEELE N, BENASSI H

Dr Van Hooff is currently a research fellow at the Centre for Traumatic Stress Studies. She qualified from her honours degree in Psychology in 1998 and in 2011 was awarded the degree of Doctor of Philosophy in Medicine for her research into the longitudinal outcomes of childhood disaster exposure. Over the last 10 years she has conducted a number of large-scale

longitudinal studies of traumatized populations. Miranda is study manger and an investigator on the Mental Health Prevalence Study.

There has been considerable discussion about the optimal cut-offs on questionnaires such as the K-10 and the PCL for the detection of psychiatric caseness in military populations. To address this issue, participants in the ADF Mental Health Prevalence Study were interviewed using the CIDI. An enriched sample of 1797 participants screened using the PHQ, K-10, PCL, and AUDIT were interviewed to determine the optimal cut-offs of the questionnaires against the CIDI diagnostic categories of major depressive disorder, posttraumatic stress disorder and substance use disorders. This presentation will highlight the challenge in choosing an optimal cut-off for military populations using ROC curves. In the present study, a large number of participants who met criteria for a diagnosable disorder fell below the commonly used cutoffs for the PCL and PHQ. The problems of using these cut-offs for screening purposes in the military and the need to increase the sensitivity of these instruments to enable accurate case detection will be discussed. The findings about the patterns of co-morbidity and risk factors will also be presented.

Key Words: Mental Health, Screening, Australian Defence Force, Psychometrics, ROC

THE PREVALENCE OF MENTAL HEALTH DISORDERS IN THE AUSTRALIAN DEFENCE FORCE; THE HEALTHY WORKER EFFECT VERSUS A RISKY EMPLOYMENT ENVIRONMENT: THE MENTAL HEALTH PREVALENCE STUDY

STEPANIE HODSON, VERHAGEN A, MCFARLANE A, VAN HOOFF M, STEELE N, BENASSI H

Colonel Stephanie Hodson graduated from James Cook University in Townsville with a BPsych (Hons) in 1990 and joined the Army in August 1991. She had had a range of posting across Australia including recruiting, research and counselling duties. LTCOL Hodson completed her doctoral studies investigating the longitudinal psychological effects of operational deployment to Rwanda in 2002 and in 2003 completed Command and Staff College. In 2006 she assumed command of the 1st Psychology Unit and was responsible for all land base psychology support to ADF operations. While CO 1 Psych she had the opportunity to deploy to both the Middle East Area of Operations and Timor Este. For her work during this posting she was awarded the Conspicuous Service Cross in the 2009 Australia Day Honours List, for outstanding achievement as the Commanding Officer, 1st Psychology UnitShe is currently director of strategic and operational mental health.

The mental health of Defence Force personnel is a critical issue of concern because of their high level of exposure to combat and other traumatic events. Previously, prevalence estimates have been limited to a selected representative sample of the Canadian Forces. In this study the prevalence of psychiatric disorders across the entire Australian Defence Force was

made by structured diagnostic interview (World Mental Health Survey initiative version of the World Health Organization's Composite International Diagnostic Interview (CIDI)). The rates of posttraumatic stress disorder, major depressive disorder, panic disorder and alcohol abuse will be reported and differentially examined between those who have been on an operational deployment and those who have not. An important confound that will be considered is the high level of physical and mental health required for service personnel to deploy, a factor that tends to minimize the differences between deployed and non deployed samples.

Key Words: Mental Health, Prevalence, Australian Defence Force, PTSD, Depression, Anxiety

COMBAT EXPOSURE AND NON-MILITARY TRAUMA AS A CAUSE OF PSYCHIATRIC DISORDER IN THE AUSTRALIAN MILITARY: THE MENTAL HEALTH PREVALENCE STUDY

PROF ALEXANDER MCFARLANE, STEELE N, VERHAGEN A, VAN HOOFF M, HODSON S, BENASSI H

Professor Alexander McFarlane currently the Head of the University of Adelaide Centre for Traumatic Stress Studies and is chief investigator on the Mental Health Prevalence Study. He qualified in Medicine in 1976 with Honours and completed his specialist training in Psychiatry in 1980. In 1990 he was awarded the degree of Doctor of Medicine based on his longitudinal research into the aftermath of the Ash Wednesday Bushfires in South Australia. Subsequently he became an international expert in the field of the impact of disasters and posttraumatic stress disorder (PTSD). He has published over 250 articles and chapters in various refereed journals and has co-edited three books. He currently holds the rank of Group Captain in the RAAF specialist reserve. In 2011 he received the Officer of the Order of Australia award in the Australia Day Honours List. The award recognises outstanding contributions to medical research in the field of psychiatry, particularly posttraumatic stress disorders, to veterans' mental health management, and as an author.

There has been a high operational tempo in the Australian Defence Force in the past 15 years. The relationship between deployments (both peacekeeping and war like) and psychiatric disorder will be presented for the entire defence force. Furthermore, the rates of non-military traumatic exposures will also be reported as these events appear to be equally relevant to the mental health of the Defence members. The relative contribution of trauma exposure to PTSD, major depressive disorder, panic disorder and alcohol abuse will also be reported. The role of trauma in all disorders is significant. Importantly, barriers to care were identified with these tending to be greater amongst those suffering from psychiatric disorders. The Military Health Outcomes Program database provides a case register against which the effectiveness of future interventions and treatment programs within the ADF can be benchmarked.

Key Words: Mental Health, Prevalence, Australian Defence Force, deployment, non-military trauma, PTSD, Depression, Anxiety

THE IMPLICATIONS OF FINDINGS FROM THE MENTAL HEALTH PREVALENCE STUDY FOR SERVICE DELIVERY WITHIN THE ADF: THE MENTAL HEALTH PREVALENCE STUDY

STEPHANIE HODSON, VERHAGEN A, STEELE N, VAN HOOFF M, MCFARLANE A, BENASSI H

Colonel Stephanie Hodson graduated from James Cook University in Townsville with a BPsych (Hons) in 1990 and joined the Army in August 1991. She had had a range of posting across Australia including recruiting, research and counselling duties. LTCOL Hodson completed her doctoral studies investigating the longitudinal psychological effects of operational deployment to Rwanda in 2002 and in 2003 completed Command and Staff College. In 2006 she assumed command of the 1st Psychology Unit and was responsible for all land base psychology support to ADF operations. While CO 1 Psych she had the opportunity to deploy to both the Middle East Area of Operations and Timor Este. For her work during this posting she was awarded the Conspicuous Service Cross in the 2009 Australia Day Honours List, for outstanding achievement as the Commanding Officer, 1st Psychology UnitShe is currently director of strategic and operational mental health.

A critical step in service planning and development is the accurate estimates of the prevalence of the various psychiatric disorders in a given population. Services cannot be properly targeted without understanding the size of the unmet need within a community. The Mental Health Prevalence Study has identified substantial rates across the spectrum of psychiatric disorders in the ADF. These findings suggest that the prevalence and risk factors have been previously underestimated.

The range of disorders identified indicates that service delivery programs need to focus on providing evidence-based care for affective disorders, as well as anxiety disorders, above and beyond posttraumatic stress disorder. Particularly the anxiety disorders have relatively low rates of treatment uptake, indicating that barriers of care are a major priority. Mechanisms for addressing barriers to care include recognition of the spectrum of disorder severity and the importance of targeting sub-syndromal conditions without placing prohibitions on the work roles these individuals are able to complete.

A further important finding from the Mental Health Prevalence Survey relevant to the ADF mental health strategy is an understanding of the psychometric performance of screening instruments in the ADF populations. This suggests that lower thresholds are required for the more effective screening of the population.

In general, clinicians need to be wary of minimizing symptomatology as it appears that this may lead to missing opportunities for early intervention. In general, the aim of an effective mental health strategy is to provide treatment before a disorder becomes entrenched with substantial morbidity. Such a goal requires the development of services that are broadly available in the least stigmatized environment.

Key Words: Mental Health, Prevalence, Australian Defence Force, service delivery, PTSD, Depression, Anxiety

GARRISON HEALTH TRANSFORMATION IN THE ADF: SHARPENING THE "BLUNT" END

TRACY L SMART

Air Commodore (Dr.) Tracy Smart joined the RAAF as a medical undergraduate in 1985. She has served as MO/Senior MO at bases around Australia, has undertaken overseas postings with the RAF and USAF, was Chief Instructor and Commanding Officer of AVMED, and Officer Commanding Health Services Wing. She has had operational experience in Rwanda, Timor Leste, the Middle East and Lebanon, and was awarded a CAF Commendation for her role in a fatal air accident investigation in Malaysia. She attended CDSS in 2008 and was posted into the dual roles of Director General Corporate Health Management and Air Force Health Services within Joint Health Command in February 2009. AIRCDRE Smart assumed a new role as DG Garrison Health Services in Feb 2010, and in this position manages health care at over 100 locations on Defence bases throughout Australia.

The 2008 Chief of Staff Committee (COSC) paper in which the recommendations of the Alexander Review were presented has served as a blueprint for a revolution in the way health services are provided to the ADF, both at home and on deployments. While ADF operational health remains a key focus, it is perhaps the changes in the garrison space that will have the greatest impact on the ADF's operational capability in the longer term.

A number of efforts have already been undertaken to transform garrison health and create the high quality, efficient, effective and safe health services that the ADF demands. These include:

Establishment of five Regional Health Services (RHS) and the recruitment of Regional Health Directors

The building or renovation of a number of health facilities to meet current standards and "hub" health services in particular locations.

Development of a tailored clinical governance framework to improve quality and safety of healthcare delivery.

A more streamlined management and command structure and transition of accountability and responsibility for health care delivery from the single Services

The creation of a more integrated and multidisciplinary approach to health care delivery through the absorption of the ADF's mental health and rehabilitation capabilities into the RHS.

The transformation of garrison health in the ADF has been a complex and challenging process and is still very much a work in progress. This paper will review the achievements so far and reflect upon our efforts in creating a joint health culture of pride, passion and achievement. For without a change in culture JHC's vision will not be fully realised.

Key Words: Garrison Health, Change management, Joint health culture, Transition

DEFENCE MEDICAL SPECIALIST SUPPORT TO GARRISON AND OPERATIONAL HEALTH IN THE PERMANENT FORCE: A NEW MODEL?

IAN YOUNG

CMDR Ian Young is an Orthopaedic Surgeon in the permanent naval force and the first official graduate of the Medical Officer Specialist Training Scheme (MOSTS). He currently works within the Regional Health Service - Victoria and Tasmania on Part-time Leave Without Pay and provides consulting services at a number of Defence establishments in Victoria while maintaining availability for short-notice or long duration deployment. Recent deployments include Op Slipper, Op Padang Assist, Ex Talisman Sabre and Ex Olgeta Warrior.

Introduction: The Medical Officer Specialist Training Scheme (MOSTS) was introduced in 2001 to enhance specialist capability for deployment. On completion of training under the scheme it was expected that the specialist would work in a part-time leave without pay (PTLWOP) capacity maintaining clinical currency and competency while remaining available for deployment. There have been numerous changes to garrison health support over the past decade and there is a role for Defence specialists to work in the garrison health space on a regular basis.

Discussion: The author currently works within the Regional Health Service in Victoria and Tasmania providing consulting services to Defence members within their establishments. There are obvious advantages for the member to be seen at their normal base by limiting their time away from work and reducing the cost of travel from remote establishments. Strong liaisons are created with the garrison health support staff at each of the establishments. The members requiring operative management are then organised to have their surgery at a private hospital in accordance with current policy. The author maintains clinical skill by working at two public hospitals but has no private practice which allows for short-notice or long duration deployments with minimal disruption. Following training as a specialist the author has deployed on 4 exercises and 2 operational deployments. The employment model above allows Defence specialists to treat military members in garrison and in operational roles while ensuring maintenance of clinical skills with ease of deployment.

Key Words: Garrison Health Support, Operational Health Support, Orthopaedic Surgery

6RAR'S POST WAR SCARS

GLENN MULHALL

CAPT Glen Mulhall graduated Medical School at the University of Queensland in 2005. He attended Nambour Hospital for internship and residency and commenced with the Army as an RMO at 2HSB as part of the Graduate Medical Scheme. He was posted to 6RAR in 2009 and deployed to Afghanistan as RMO MTF-1 in 2010. He continues to work as the RMO at 6RAR

Over the years war has placed a burden on Australian society and especially as a small burgeoning country being involved in most of the major conflicts from the Boer War onwards. As our commitment in Afghanistan continues and our attention is

largely drawn by the media to those soldiers who are KIA and to when we may pull out, there is a rising morbidity amongst our soldiers returning from the front line.

As the RMO for 6RAR from 2009 until the present day I deployed with 6RAR as part of the MTF-1 battlegroup to Afghanistan from January to June 2010. MTF-1 was present in Afghanistan for this period and remained until October when the battle group handed over to MTF-2. During this period the soldiers of the battlegroup saw an unprecedented amount of action during a fierce fighting season and a record number of soldiers lost their lives during the campaign.

Since returning from Afghanistan I have remained as the RMO for 6RAR throughout the post-deployment period and on return to work and have had the benefit of seeing the soldiers through all of these phases. Through a chart and Health Keys audit of injuries, imaging and referrals I endeavour to provide a comprehensive picture of the burden of war on our health system, on a battalion tasked with continuing training and exercises, on our budget with claims extending into the future and on the individuals and those who support them. I have documented the post war scars of the 377 remaining MTF-1 personnel who make up approximately 56% of 6RAR.

The rates of injuries including backs, shoulders, hearing, mental health and other morbidity post-deployment requires a focused and combined multi-disciplinary approach to ensure adequate levels of care. Detection is a key focus on return from deployment through POPS campaigns and post-deployment medicals, however once injury is detected, then resources, time and appropriate services are required. On a health system that is already at its limit, this extra burden needs to be accounted for in forward budget estimates, staffing and resourcing of post-deployment units.

Key Words: Post-deployment; 6RAR; morbidity; injury; Afghanistan

MILITARY COLOUR VISION STANDARDS - DO WE NEED THEM?

JOHN PARKES

Captain John Parkes is an occupational and environmental physician who served in the RAN and RANR for over 30 years. He became interested in colour vision while reviewing standards in the RAN and in private practice since then has developed a comprehensive colour vision testing laboratory and sees referred cases from around Australia and occasionally overseas, particularly in relation to Defence, aviation, maritime, rail and other standards. He has been involved in colour vision standard review for Defence, rail, maritime and fire brigades. He is a member of the International Colour Vision Society. He is currently Regional Director, Naval Health Reserves for Victoria and Tasmania, and is the current Chairman of Southern Region Triumvirate.

Colour vision standards in the Australian Defence Force using Colour Perception Categories 1, 2 and 3 were set in a past era. Since then the nature of warfare has changed, with, on the one hand, increased use of technology and less direct dependance on vision, but, on the other hand, increased use of colour in displays; there is a better understanding of the

nature of colour vision with an appreciation of the rather arbitrary levels at which the current standards are set; there is an increased incidence of acquired colour vision defects in the general community; more sophisticated colour vision testing is now available; and risk assessment and risk mitigation or elimination strategies are now being employed to manage occupational risk, such as the risk to safety critical work from workers with defective colour vision.

The utility of current ADF colour vision standards is reviewed in the light of these developments and ways forward explored.

Key Words: colour vision, military medical standards, colour perception

GETTING MORE BANG FOR YOUR BUCK FROM AUSTRALIAN HEALTH SURVEILLANCE PROGRAMS: RECOMMENDATIONS FROM THE LITERATURE

JUDITH SYMONDS

Dr Judith Symonds is a Researcher at the Centre for Military and Veterans' Health (CMVH) at the University of Queensland. Judith coordinates the Health Surveillance Program at CMVH and has been integral in the process of setting up IT infrastructure to digitally curate and preserve health research data and health records from legacy systems and data modelling and mapping to aggregate health data from different sources. After gaining her education in Queensland, Judith has worked for 12 years in New Zealand, most recently at the Auckland University of Technology in the field of augmented technology for Traumatic Brain Injury and Judith has a background in data architecture, data modelling and data access and integrity. Judith holds a PhD from UQ in Rural Systems Management, a MIT by research from the USQ in Information Systems Change Management and a BIT from the USQ in Commercial Software Development.

Recent improvements in International Standards for health records (openEHR, SNOMED), advances in the use of personal health records and recent trends in end-user driven analysis and reporting tools such as PowerPivot promise new potential in the Health Surveillance field. Specifically, the potential for true linkage and aggregation of national health data is one step closer with the application of internationally recognised health data standards and freely available data analysis plug-ins now available on popular desk-top productivity tools. However, there is much to learn from previous health surveillance programs undertaken in the past decade. Therefore, the aim of the work reported here was to review Health Surveillance Programs reported in the literature and to put forward recommendations for new ways to gain cost benefits from them.

The literature review reported in this presentation covers a wide range of articles from academia and industry available through the ISI Web of Science online database. A citation index method was used to identify relevant papers in the database based on key papers and the process of identification of suitable papers was continued until no relevant new papers were being identified. EndNoteWeb was used to group and categorise the papers for the review using a process of first reading the abstract of the paper and then scanning key sections of the full paper. Based on the groups developed in EndNoteWeb, mindmaps were produced, first independently by each of the authors and then collaboratively and these mind maps then formed the bases for the answers to each of the research questions. This presentation will provide an overview of the literature review undertaken taking each of the three research questions posed at the beginning of the review; (1) how do we define Health Surveillance research (2) what can be known through conducting Health Surveillance research (3) what are the strengths and weaknesses of existing Health Surveillance programs reported in the literature. Firstly, the review will consider how the authors define Health

Surveillance. Secondly, the review will investigate the question of what can be known from Health Surveillance research. This analysis follows on with a SWOT analysis of relevant Health Surveillance programs reported in the literature in order to identify pertinent design strategies such as trade-offs in the size of the cohort and also the trade-offs between use of primary data, secondary statistical data, ambient health record data and combinations of all three. The results of the SWOT analysis will then lead into a discussion of pitfalls to be avoided and cost benefits to be gained.

The presentation will conclude by providing a set of recommendations for Health Surveillance programs that can take advantage of new IT capabilities that have come about through more attention to international standards for structuring health data and more powerful analysis and reporting tools in the hands of productivity software computer users. This presentation will be of great interest to any departments considering Health Surveillance programs or those considering how they could gain cost benefits through access to Health Surveillance analysis and reporting.

Key Words: Health Surveillance; openEHR; SNOMED; PowerPivot; Personal Health Record

TRAINING HOSPITAL BASED SURGEONS TO OPERATE IN THE FIELD

DAVID READ

David Read id the Director of Trauma at the National Critical Care and Trauma Response Centre at the Royal Darwin Hospital. As an Army Reservist he has deployed to East Timor, Iraq and Bali 1 & 2.

Since 2010 the National Critical Care and Trauma Response Centre has been running a Disaster Surgical & Anaesthetic Assistance Course with the aim of improving the quality and uniformity of surgical care in humanitarian and disaster response. The surgical aspects of the course focus more on what not to do drawing on the experiences of previous response teams who applied usual hospital based surgical principles to the field settings with sometimes disastrous results. A review of the disaster surgical literature will be presented.

This talk will firstly discuss the surgical disaster responses of the Royal Darwin Hospital from Bali to Ashmore Reef and how that response has matured with experience.

Next information on, feedback from and video footage of the Surgical & Anaesthetic Disaster Assistance Course will be presented. There are many parallels between the training the authors have received in uniform and that presented at this course aimed at civilians.

(AS) CASPEAN, THE AUSTRALIAN CASUALTY AND PROTECTIVE EQUIPMENT ANALYSIS PROJECT: AN OVERVIEW AND CURRENT STATUS REPORT

MARK A JAFFREY, TONI BUSHBY

Mark Jaffrey joined DSTO in 2001. He has worked on a number of projects related to biomechanics, ergonomics, injury analysis and prevention, human-system integration and physical employment standards. His injury analysis and prevention research has included static line parachute landing injuries and Army recruit training overuse

injuries. More recently, he has been working on combatant traumatic injury analysis, prevention and mitigation through the CASPEAN project. Mark has a PhD in biomechanics from Victoria University.

Toni Bushby joined the Australian Army in 1996 as a Nursing Officer. Posted units have included; 2nd Field Hospital, 1st Combat Service Support Battalion, 3rd Combat Service Support Battalion, 5th Aviation Regiment, Army Logistics Training Centre, Roberston Barracks Medical Centre, Simpson Barracks Health Centre, and Headquarters Joint Operations Command. She has deployed to Kosovo in 1999, to East Timor in 2000, 2001 and 2002, and to Afghanistan in 2006/2007. In her current role, Toni is the Staff Officer Grade 2 for Health Operations Global, where she has been working with DSTO on the CASPEAN project. She has postgraduate qualifications in Health Services Management, Vocational Education and Training, Emergency Nursing and Pre-hospital Care

Various stakeholders within the ADF have recognised the need for a system to improve our understanding of the causes and mechanisms of weapons-related battlefield trauma and protective systems performance. The Defence Science and Technology Organisation (DSTO) was tasked to scope the requirements for establishing such a system, noting the potential to leverage or utilise an existing Canadian Forces initiative called the CASualty and Protective Equipment ANalysis (CASPEAN) system. The data collation component of CASPEAN centralises all available weapons-related battlefield incident data, including the threat/scenario, relevant weapons technical information, protective systems damage/performance assessments and casualty injury data, in a single database.

(AS) CASPEAN, a uniquely Australian adaptation of the CASPEAN system, is being implemented by DSTO and HQ JOC Health Branch with input from key stakeholders. It will cater for the ADF's unique data collection, collation, analysis and reporting requirements. The overall aim of (AS) CASPEAN is to make optimal use of all available information derived from weapons-related battlefield events affecting ADF personnel, thus enabling the full potential for improvements to soldier protection and survivability to be realised. The objectives are to collect and collate relevant data sources; to analyse discrete events and series of related events using an integrated team comprised of members representing all relevant fields of expertise; and to report findings to relevant stakeholders in a timely, consistent and relevant format.

This presentation will outline how the (AS) CASPEAN system is being implemented and continuously improved, focussing on the essential roles of a deployed CASPEAN Officer, a DSTO-based Army Reserve Health Officer and DSTO scientists. Examples of discrete incident and trend analyses will be presented to highlight the potential to produce more defensible conclusions about the causes and mechanisms of protective systems damage and casualty trauma. Such outputs will result in more valid information being available for Defence stakeholders to make better evidence-based decisions regarding soldier protection measures, spanning

domains such as tactics, techniques and procedures; equipment acquisitions and modifications; capability development; and research prioritisation.

Key Words: Trauma, Casualty Analysis, Protective Systems Performance, Battle Damage Assessment

BACK TO THE WALL – A CASE OF COMPLICATED BACK PAIN

BENJAMIN MANION, M THOMPSON

Captain Manion is an ARES officer in 2HSB Brisbane. In civilian service he is working as a neurosurgical registrar in Greenslopes Hospital, which sees a high proportion of Brisbane's DVA patients. He has a particular interest in the acute management of neurosurgical trauma.

Dr Thompson is a house officer working in Greenslopes Hospital. She has an interest in public health and ENT surgery.

Back pain accounts for a high disease burden in the modern military. It is prevalent among those on active service, and has a close but poorly defined relationship with psychological stress and psychiatric predispositions. Proportionally higher rates are seen across all military service compared with the civilian population, with rotary and armoured personnel showing particular vulnerability. It accounts for a significant percentage of medical dischar ges, and up to 87% of those affected while on active duty fail to return to their unit. Affected individuals have an estimated 60% higher health care expenditure over their lifetimes. Back pain has historically been enigmatic to treat, and this remains the case despite advances in diagnostic and therapeutic modalities. In view of the recently published PLOM trial, focussing on protocol for prevention of back pain, we will today present a case detailing the complexities involved in management of established and complicated back pain, and particularly the pitfalls of invasive treatment methods. This case highlights the need for an aggressive multidisciplinary approach to the management of back pain. Currently the two most rational points of therapeutic focus are on prevention and more aggressive treatment in forward-deployed medical units. This case also demonstrates that our current understanding of rational diagnosis and effective treatment is relatively limited, and more data is needed to identify a workable and sustainable model.

Key Words: Back Pain, Clinical Practice, Spinal cord stimulator, Chronic Pain, Spinal fusion, Workplace health and safety, Radiology

THE INCIDENCE OF CHONDROMALACIA PATELLAE IN THE ADF

WARREN HARREX

Dr Harrex gained his primary medical qualifications at the University of Tasmania in 1974. He obtained a Master of Science in occupational medicine from the University of London in 1985 and obtained specialist qualifications in occupational medicine in 1988 and public health medicine in 1991. He served in the RAAF for 26 years and was promoted to Air Commodore in 1996 as the Director General of Clinical Services for the Australian Defence Force. He remains on the RAAF Reserve and had operational service in East Timor in 2003.

Since leaving the Air Force in 1998, he has established a private practice as a consultant occupational physician in Canberra and has provided consultancy services to a number of government agencies including the Department of Veterans Affairs. He was the principal investigator for the Korean War Veterans Mortality Study and is a co-author on a

number of scientific papers on veteran's health. He has a particular interest in the application of epidemiological tools for the prevention of workplace illness and injury.

Background: Chondromalacia patellae (CMP) is a commonly claimed compensable condition by serving and former serving members of the Australian Defence Force (ADF).

Aim: To determine the incidence of chondromalacia patellae in the ADF.

Method: The Australian Government Department of Veterans' Affairs (DVA) Military Compensation and Rehabilitation Group compensation claims database was used to identify all potentially eligible chondromalacia patellae claims (ICD CM-AM Code M22.4) determined between 1 January 2006 and 31 December 2007. For the purpose of calculating incidence rates, the published midpoint 2006-2007 actual Regular personnel strength within the ADF of 51,504 was used as the denominator. The strength by the single Services were Navy 12,690 (24.6%l), Army 25,525 (49.6%) and Air Force 13,289 (25.8%).

Results: During the study period, 639 claimants (Navy 83, Army 436, Air Force 120) lodged a total of 819 CMP-related claims, with some overlap between claims and claimants under the three compensation schemes (SRCA, MRCA and VEA). The calculated annual incidence of CMP in the ADF was 0.62 per cent, with the incidence in Army (0.85 per cent) being about double that of the other Services (Navy 0.33 per cent, Air Force 0.45 per cent). This inter-Service difference was statistically significant ($P < 0.0001$). CMP developed early during ADF service.

Discussion: Army had the highest incidence of CMP over the period reviewed, with an annual excess of about 120 cases more than predicted compared with the other Services, principally arising from training courses and physical fitness training. The cost of treatment and compensation for accepted cases of CMP was estimated to exceed $4 million annually. CMP represents a significant recurring expense for both the ADF and DVA. This study highlights the need to develop systematic monitoring with respect to the identification and prevention of compensable conditions to reduce both ADF health care costs and DVA compensation costs.

ENDO FEMORAL PROSTHESES (EEFP) A NEW TECHNIQUE TO IMPROVE THE TREATMENT OF ABOVE KNEE AMPUTEES (AKA) QUALITY OF LIFE

MUNJED AL MUDERIS

Dr. Al Muderis is an orthopaedic surgeon and a clinical lecturer at Macquarie University and The Australian School Of Advanced Medicine, specialising in Hip, Knee and Trauma surgery. He has a special interest in Hip and Knee Joint Replacement surgery, Hip and Knee Arthroscopy, Hip and Knee reconstructive surgery. He is associated with Specialty Orthopaedics, a group of specialists who operate out of The Sydney Adventist, Norwest Private and Macquarie University Hospitals with consulting rooms at Parramatta, Bella Vista, Macquarie University and Wahroonga. He is also the Chairman of Osteointegration Group of Australia, providing those with above-the-knee amputations with a leg replacement

using the Endo-Exo Prosthesis, which is designed to be as close to the human anatomy as possible. He is a Fellow of the Royal Australasian College of Surgeons. Between 2008-2010 he completed three post specialisation fellowships including:

- *Lower limb arthroplasty fellowship at the Emil Von Behring Klinikum Berlin, Germany.*
- *Trauma fellowship at the Unfallkrankenhaus Berlin, Germany.*
- *Lower limb arthroplasty fellowship at the Sydney Adventist and Baulkham Hills Hospitals.*

Background: Patients with above knee amputations (AKA) face many challenges to mobility including difficulty with socket fit and fatigue due to high-energy consumption. In 1999, we began using the Endo-Exo Femoral Prosthesis (EEFP), a cobalt-chrome alloy macroporous spongy surface that creates a favorable environment for osseointergration. This transcutaneous, press-fit distal femoral intramedullary device whose most distal external aspect serves as a hard point for AKA prosthesis attachment. The origins of this technique stem from osseointergrated, percutaneous implant used in dentistry.

Methods: The first EEFP was performed in 1999, with 84 cases worldwide in our series to December 2010. The indication for surgery was persistent AKA prosthesis complications and difficulties. The EEFP is implanted in two stage procedure. Firstly, the femoral component is implanted in a retrograde fashion, followed six weeks later by stomatisation whereby the distal aspect is exposed and an extension added for fixation of the AKA prosthesis. The stoma matures and epithelises while solid bony ingrowth inhibits ascending infection.

Results: Overall, there was a high level of patient satisfaction (97%). Most patients returned to pre-amputation activities. Gait improved in all patients that retained the implant. Complications include stoma problems, a multiple revision, periprosthetic fractures and two explanations . The majority of the complications occurred during the first 5 years of the technique ('learning curve').

Conclusion: We have found the EEFP demonstrates secure osseointegration, leads to an improved gait along with physiological osseoperception, comparatively less energy expenditure, elimination of stoma problems and high levels of patient satisfaction.

MILITARY MEDICAL INDICATIONS FOR FOOT ORTHOSES

TONY DELANEY

COL Tony Delaney is a Sports and Exercise Physicianat Narrabeen Sports Medicine Centre and visiting Senior Specialist to FBEHC and 1 HSB. He is Chair, ADF Musculoskeletal, Sports and Rehab CG. His interests include overuse injuries of the spine , upper/ lower limbs, physiology and injury in hot , cold, high altitude and underwater environments.

Properly prescribed and made orthotics correct the underlying biomechanical cause of most overuse and many acute injuries of the lower limb. The use of correction for leg length discrepancy, rear, mid and forefoot alignment, plantar fascial grooves, metatarsal domes, MTH rockers, sesamoid, and calcaneal relief will customise an orthotic for most injuries. Full

length orthotics are best for sports and pack marching. Thinner ¾ length orthotics for dress shoes.

Orthotics can be designed to improve military/athletic performance.

An appropriate orthotic should lead to complete or significant rapid relief of symptoms. An orthotic should be comfortable and reduce the patient's pain immediately, or within a few weeks.

Orthotics should be a prime part of the management of;

Foot
Sesamoiditis; Hallux valgus, limitus, rigidus; Interdigital neuroma/impingement; metatarsalgia, bone stress, Dorsal TMTJ impingement, stress Fractures, Plantar fasciitis and plantar fascial strains, Painful pes planus, cavus, Sever's syndrome

Ankle
anterolateral impingement, posterior impingement, FHL, Tib post, fibularis (peroneus) brevis, Achilles, tendinosis/ tenosynovitis, talar dome contusions/ lesions.

Leg
Medial tibial traction enthesitis (shin splints), tibial/fibular bone stress/fracture, STFJ sprains, medial head gastroc strains

Knee
PFJ syndrome, ITBFS, Unicompartmental OA, degenerative meniscal tears, pes anserinus bursitis, Biceps femoris bursitis, Osgood-Schlatters, Sinding Larsen Johannson S, patellar tendinosis

Hip
Trochanteric, gluteus medius, Tensor fasci lata bursitis/tendinosis, hamstring tears / tendinosis, acetabular labral tears, limited area OA, otherwise THR/resurfacing.

L/S spine
facet arthralgias, some discogenic pain (via leg length and postural correction

MEC1 if uses orthotics, but able to fully perform duties, fitness assessments and deploy without being dependent on orthotics.

MEC 202 if needs orthotics to perform full duties, fitness assessments, deploy
Delaney's Laws of Foot Orthotics

Orthotics must:

- Fix the problem
- Be comfortable
- Fit in the shoe

Further management hints for overuse injuries of the lower limb. Attention to appropriate shoes, training errors, cross training, coexistent disease

Relative Rest

WELLBEING TOOLBOX - DEVELOPMENT OF A COGNITIVE-BEHAVIOURAL WEB SELF-HELP PROGRAM

JANE NURSEY, CLARKE CHRIS, O'CONNOR J, LLOYD D, PHELPS A

Jane joined ACPMH in 2010 as a Senior Clinical Specialist. Prior to her appointment she was Manager of Outpatient Programs at Post Trauma Victoria and the Veteran Psychiatry Unit at Austin Health. She has worked in public acute and mental health services across Melbourne for 18 years, including with CAMHS and Adult and Aged Care services. Jane has presented on the neuropsychological aspects of PTSD both in Australia and overseas and coordinated a treatment service for bushfire survivors following the Victorian bushfires in February 2009. At ACPMH Jane is involved in policy and service development projects as well as education and training programs.

An evidence-based program (Skills for Psychological Recovery) has been converted to an interactive, self-help, electronic version for veterans, other ex-serving members and their families (the Wellbeing Toolbox). The Wellbeing Toolbox is targeted to transitioning and hard–to-reach veterans as a DVA-managed project of the Defence/DVA Lifecycle Package that enhances mental health support through and after service. ACPMH was contracted to supply content and SMS Technology the design and functionality. The site is accessed via its own web address (http://www.wellbeingtoolbox.net.au) but is also nestled within the DVA and Defence touchbase site (http://touchbase.gov.au), a 'one stop shop' providing practical support for ex-members. The Toolbox is modular in construction, with users guided in their selection of topics and order of completion. The centrepiece of the Toolbox is a self-management plan consisting of goals and review dates across the topic areas. The plan is completed manually or is automatically populated by entries from the interactive worksheets within the topic modules. Research indicates that most website users expect a high degree of interactivity, quickly scanning sites for personally salient content. Consequently, flash technology was used to create a highly visual, interactive and animate product with minimal word content. 'User testing' indicated high acceptability of the structure, style and functionality of the product, with an eagerness to engage. User statistics from the first six-months will be presented.

Key Words: Wellbeing, self-help, Veterans

RESEARCH SHOWING 'VULNERABILITY FACTORS' FOR DEPRESSION CAN INFORM TRAINING AIMED AT REDUCING VULNERABILITY AND INCREASING RESILIENCE

HELEN VIDLER

Dr Helen Vidler is a registered psychologist and member of the RAAFSR at 3EHS RAAF RICHMOND. She has worked clinically with children, couples and families since the 1980s, and after specializing in family therapy, has provided training and mentoring to other mental health professionals. She then undertook further study for a Master of Women's Health and PhD from the University of Melbourne in the area of depression. Since relocating to Sydney, Helen has worked as a lecturer with the University of Western Sydney (UWS), and practitioner and trainer in an

Employee Assistance Program with NSW Health. Recently she completed her post doctoral research at UWS concerned with the multifactorial nature of depression. Helen is currently employed as a Research Fellow at St Vincent's Hospital Sydney, holds an Adjunct Research Fellow appointment at UWS, and maintains a small private practice. She is also studying for a qualification in IT.

This paper will discuss results from recent research conducted with depressed women (n=222) that identified a range of biopsychosocial/contextual factors involved with being depressed and also with recovery from depression. These findings confirm results from two earlier research studies with smaller samples of depressed women that showed how multiple issues such as physical, psychological, social and contextual are each involved in being depressed.

The most significant finding in this recent research came from the factor analysis of the data. This showed that there were several factors relating to depression that were common across the entire sample. These factors, termed 'vulnerability to depression' factors, were experienced at differing levels (low, moderate, or high) for all women in the sample. Depression was experienced as an interaction between those vulnerability factors and adverse or triggering events.

This finding is compatible with the 'vulnerability-stress' theory for depression where individuals who are moderately/highly vulnerable on a number of factors unrelated to genetic predisposition, are consequently low on resilience and therefore unable to withstand varying stress levels produced by adversity or triggering events.

This model explains why, given particular adverse or triggering events, some individuals will become depressed and others will not. Individuals with low levels of vulnerability on particular factors will consequently have higher levels of resilience and are least likely to become depressed faced with adversity.

We usually have few opportunities to control for adverse or triggering events whereas we can control levels of vulnerability by learning new skills. For example, one of the factors identified was 'lack of social support and being isolated'. Individuals can be taught ways to successfully build social support and reduce isolation thereby building higher levels of resilience. This skill learning would lead to increased resilience. This would also protect those individuals, previously having recovered from a depressive episode, from a relapse episode.

This research evidence informs the future directions of mental health literacy training.

Based on these findings, work is underway to provide an online training package aimed at women, which will focus on teaching ways to reduce levels for the vulnerability factors identified and thereby build resilience. In this way when an individual is faced with life's challenges they will be better able to cope and less likely to become depressed.

Even though several of the vulnerability factors identified in this research would hold true for men, similar research will be conducted with men to firstly identify male specific vulnerability factors before offering

a similar skill learning, mental health literacy program.

Key Words: Depression, women, vulnerability factors, adversity, triggering events, vulnerability-stress model, research, resilience, online, mental health literacy, training

STRESSFUL DEPLOYMENT EXPERIENCES AND CHILDHOOD ADVERSITY AS RISK FACTORS FOR POST-TRAUMATIC STRESS, ALCOHOL USE AND PSYCHOLOGICAL DISTRESS AFTER AUSTRALIAN DEFENCE FORCE DEPLOYMENTS

WU YI ZHENG, MICHAEL WALLER, JEEVA KANESARAJAH, SUSAN TRELOAR, ANNABEL MCGUIRE, ANNETTE DOBSON

Wu Yi completed his PhD in gambling psychology at the University of Sydney in 2009. He is currently working on the MEAO Census study as a research fellow at the Centre for Military and Veterans' Health, University of Queensland.

Background: Research evidence suggests that individuals exposed to high levels of childhood adversity are at increased risk of mental and physical ill health in later life. In the military context, soldiers with a history of childhood adversity have been found to have higher risk of developing adverse health conditions including Posttraumatic Stress Disorder (PTSD), depression and self-harming behaviour, heavy drinking and smoking.

This research, using data collected from Australian military personnel previously deployed to Bougainville (BV) and Timor-Leste (TL), aims to investigate whether a high level of childhood adversity predicts risk of PTSD, alcohol misuse and high psychological distress after adjustment for stressful deployment experiences.

Methods: Self-report data was collected in 2008 in the Bougainville and Timor-Leste Deployment Health Studies. Participation was obtained from 49% (n=2,342) of members who deployed to Bougainville between 1997 and 2003, and from 46% (n=1,833) of a random sample of members who deployed to Timor-Leste between 1999 and 2005. Logistic regression was used to assess the effect of childhood adversity and stressful deployment experiences on PTSD caseness (PCL-C ≥ 50), levels of alcohol misuse (AUDIT) and levels of psychological distress (K10 ≥ 30). Stressful deployment experiences were measured by the TSES-R scale and modelled as a linear predictor. Six or more negative childhood experiences were categorised as a high level of childhood adversity, which was modelled as a binary predictor.

Results: Bougainville and Timor-Leste veterans with high childhood adversity had increased odds of PTSD caseness [BV OR 1.61 95% CI (1.09, 2.49) and TL OR 2.17 95% CI (1.45, 3.25)], alcohol problems [BV OR 1.64 95% CI (1.11, 2.42) and TL OR 2.05 95% CI (1.44, 2.94)] and psychological distress [BV OR 1.95 95% CI (1.30, 2.93) and TL OR 1.74 95% CI (1.15, 2.63)].

The effect of childhood adversity on these outcomes in the Bougainville and Timor-Leste veterans was reduced by 11%-30% once stressful deployment experiences was accounted for in the model. Results from interaction models suggest that the effect of stressful deployment experiences on health outcomes was slightly reduced in those with more childhood adversity. However, this interaction effect was only

significant for Bougainville veterans on the measure of psychological distress. The association between stressful deployment experiences and psychological distress was reduced by 9% [OR 0.91 95% CI (0.83, 1.00)] in those with high childhood adversity.

Conclusions: Our results affirm the association between childhood adversity and adverse health outcomes shown in other studies. However, there is some suggestion that childhood adversity may act as a protective factor in reducing effects of stressful deployment experiences on the development of adverse health outcomes.

Key Words: Childhood adversity, PTSD, alcohol, psychological distress

CLINICAL EXAMINATION IN MILD TRAUMATIC BRAIN INJURY AND ITS ASSOCIATION WITH COGNITIVE OUTCOMES

MARK SLATYER, CLIVE SKILBECK, JENNY LANGLEY

Dr Mark Slatyer has extensive experience in the ARA and ARES as a medical officer and as a Rehabilitation Physician in Brain Injury and Spinal Cord Injury subspecialty practice. Currently service as a Reserve office with 3 HSB and run a neuro-rehabilitation clinic at 2 HSB. My research interest is mild traumatic brain injury and its outcome.

A follow-up study of 456 subjects with Mild Traumatic Brain Injury (mTBI) was undertaken using the ACRM criteria for mTBI and had neuro-psychological abnormalities and a temporal relationship with a history of head injury . The subjects were followed up for a period of 3 years and drawn from a population of 220,000. There were Emergency Room (ER) data collection points at 1,3,6,12,18, 24 and 36 months.. Systematic sample with outcome assessment in many medical, cognitive, social and functional domains. Full neurological examination was undertaken including the Sharpened Romberg's test. Hospital Anxiety and Depression Scale (HADS) was measured for all subjects. Rivermead Post Concussional Scale RPS was an instrument to measure the severity of symptoms in subjects. Visual Analogue scores for Pain and Fatigue were used. Analysis was untaken to establish relationships between the physical variables such as balance and cranial nerves and the affective, cognitive and physical symptoms experienced by the subjects. The T-test was used for the presence or absence of the physical finding and the variables of Rivermead, HADs Anxiety, HADs Depression, PTA, LOC, Days post-TBI, VAS Pain and VAS Fatigue

SPSS Statistical Package version 17 was used for all analysis.

Gender was 63.4 % with a mean age of 31.86 years and SD 14.37. The causes of mTBI were 34% motor vehicle accidents, 33% assaults, 18% falls, 8% Sport and 7% other. Balance was abnormal in 17% tandem walk, 14% Romberg's test and 41% Sharpened Romberg's test. There were significant difference on t test for pain, RPS, fatigue and HADS anxiety ($p < 0.001$). The Sharpened Romberg's test was found to have significant associations between Sharpened Romberg's test and age, RPS,

VAS fatigue, HADS anxiety and HADS depression. First cranial abnormalities t-test and other variables were positive for RPS, HADS anxiety and HADS depression ($p < 0.001$). There was a statistical and biological significant relationship between Trails B , PASAT 3 second, FAS-COWA, HADS ($p < 0.001$).

Many cognitive, medical and affective outcome measures remain abnormal for extended periods. We need to better understand why a biologically significant number do not get better with mTBI. Further analysis on more complex relationships of outcome is required to achieve a better understanding of why some patients don't always get better.

Key Words: Clinical Examination techniques, Mild Traumatic Brain Injury, Neuro-psychology, Rehabilitation Medicine.

THE RELEVANCE OF MILITARY TRAUMA CARE TO CIVILIAN PRACTICE

MARY LANGCAKE

Mary Langcake is an Upper GI Surgeon and Director of Trauma at St George Hospital in Sydney, one of the Major Trauma Centres for NSW. She is a SQNLDR in the RAAF SR and in 2008 deployed to Tarin Kowt as part of Australian Medical Task Force 2.

It is an oft quoted truism that the only thing to benefit from war is surgery. Indeed Hippocrates is recorded as saying: "He who desires to practice surgery must go to war." The Smith Papyrus dated from 3000 BC documents 48 cases of head trauma and the recommended management. Over the centuries, military conflict and the need to care for wounded soldiers and civilians has seen enormous progress made both in reducing mortality and in minimising morbidity from battlefield injury. But it is important to understand the benefits this progress has had in civilian practice. Concepts such as rapid evacuation from the scene of injury to definitive care had their nascence in battlefield CASEVAC and MEDEVAC. Damage Control Resuscitation, developed during the Iraq and Afghanistan conflicts, is now well established in both pre-hospital practice and in Emergency Departments of major trauma centres. This paper will review the history of military trauma care from the time of the Pharaohs to recent conflicts, and consider ways in which innovations in trauma care, founded in war, have led to improvements in civilian trauma practice.

Key Words: Military History, Trauma

PROBLEMS IN PARADISE: MEDICAL ASPECTS OF THE NEW ZEALAND OCCUPATION OF WESTERN SAMOA, 1914 -1919

MICHAEL TYQUIN

Major Michael Tyquin PhD, BEc, BA (Hons) is a long time serving member of the Royal Australian Army Medical Corps. He is a widely published historian and is also an adjunct professor at the Centre for Military and Veterans' Health.

This paper looks at an early example of a military health deployment in 1914, namely the occupation of Western Samoa by New Zealand forces in 1914. The presentation includes a profile of military health problems encountered during the four years of the occupation. Most of these still present challenges for military medicine today and include alcohol abuse, nutrition and dental issues, and mental health problems. Later, Western Samoa became the focus for the Royal Australian Navy's first humanitarian mission.Author Index.

WOMEN PIONEERS OF MEDICAL CORPS: THE STORIES OF MAJOR (LADY) MACKENZIE AND MAJOR MAKERRAS

SUSAN NEUHAUS

Associate Professor Susan Neuhaus has competed 20 year working with both the Regular Army and Reserve in a number of roles; as a staff officer, commander and clinician including operational tours in Cambodia, Bougainville and Afghanistan. She was promoted Colonel in 2008 and awarded a Conspicuous Service Cross in 2009. Associate Professor Neuhaus works in full time civilian surgical practice. She remains actively involved in Veterans health

issues and holds a number of advisory and Board roles. She has a strong interest in the strategic implications of operational health care and is widely published on issues of strategic and Defence health.

Twenty six women doctors (five majors and twenty one captains) served in the Australian Medical Corps in the Second World War. Most served as specialists in General Hospitals, some in general duties and administration.

This paper will present two examples of the contribution of these early pioneering women of the Australian Army Medical Corps; those of Major (Lady) MacKenzie and Major Josephine Mackerras.

Winfred MacKenzie (Dr Winifred Iris Eveyln Smith) (1900-1972)

Lady MacKenzie obtained her medical degree in 1924. At the outbreak of the Second World War she was one of 323 female medical practitioners in Australia, none of whom were yet listed with any Militia or Volunteer appointment in the Australian Army Medical Corps.

As the recent widow of Sir William MacKenzie, a Victorian orthopaedic surgeon, she undertook voluntary civilian service at Army Headquarters in Melbourne for six months prior to becoming the first woman commissioned into the Australian Army Medical Corps (AAMC) with the rank of honorary Captain on 25th September, 1940.

Her roles were principally administrative within the office of the Assistant Director General of Medical Services (ADGMS), a role in which she herself subsequently served with the rank of temporary rank of Lieutenant Colonel. At the conclusion of WWII Lady MacKenzie was one of the few women doctors to remain active in the Army Reserve, reverting to the rank of Major.

Lady MacKenzie is remembered, not just for her contribution to the AAMC but also in her work as a biological researcher, in comparative anatomy and for the gift of Healsville Sanctuary, which she and her husband bequeathed the nation.

Mabel Mackerras (1896-1971)

The influence of Major Josephine (Mabel) Mackerras in the fields of military and preventive medicne cannot be overstated. She enlisted in November 1941, was commissioned as a substantive captain in February 1942 and posted to 103 Australian General Hospital. In 1944 she was transferred to the Medical Research Unit (AIF) of Land Headquarters in Cairns and promoted Major. Over the next few years her meticulous research involved more than one thousand human volunteers in extensive experiments to provide control for the clinical malaria affecting Allied Forces in the Pacific Campaign

In her laboratories in the MRU(AIF) in Cairns she was the first person in the world to establish a breeding colony of Anopheles punctulatus. This achievement underpinned the desperately needed experimental research into malaria therapy and prevention and formed the basis for chemoprophylaxis.

Her pioneering work stands as a legacy in medical entymology, which she continued after the war with the discovery that cockroaches transmit Salmonella and were a vector for childhood gastroenteritis.

Both of these women made a significant

contribution to the Corps and to the war effort. Both were serially recommended unsuccessfully for Honours. Under the 50 year Archives Access Rule it has been possible to obtain details of these nominations, which appear to have been denied as the conditions of womens' enlistment, whilst providing for equal pay and allowances, specifically excluded them from eligibility to Honors and Awards.

Key Words: History, Women Medicine

CLINICAL HUMANITARIAN MEDICINE LESSONS LEARNED FROM PAKISTAN ASSIST 2

DR IAN NORTON

Dr Norton is the Director, Disaster Preparedness & Response, National critical Care and Trauma Response Centre, Emergency Physician. Clinical experience in South India and Indonesia, postgraduate qualifications in tropical medicine and international health and in surgery as well as being a specialist in emergency medicine. Team leader Ashmore Reef boat explosion 2009 and AusMAT team leader Pakistan August-October 2010. Involved with development and delivery of national AusMAT specialist training courses, AusMAT equipment, uniforms fitness and heat research. Research interests in mass casualty and humanitarian triage and tracking systems, heat illness and national surge capacity mapping.

Introduction: In August 2010, the Australian government ordered ADF and AusAID to form a joint task force JTF 636, in response to devastating floods affecting Pakistan. After initial needs assessment, and in consultation with Pakistani authorities and military, JTF 636 was tasked to provide humanitarian medical aid to the people of Kot Addu, Punjab, Pakistan. This was the first large scale joint civil-military mission, combining large numbers of defence health personnel with an Australian Medical Assistance Team (AusMAT) made up of senior doctors, nurses and paramedics from several states and territories. Several novel medical humanitarian interventions were put in place, with excellent outcomes for the over 11,000 patients treated during the 2 ½ month mission.

Discussion: Ondansetron wafers
High numbers of gastroenteritis cases were expected and encountered. Diarrhoeal disease was a frequent presenting complaint, with 949 cases treated, including 154 acute watery and 40 bloody diarrhoea cases. Many were children, and when accompanied by vomiting, their dehydration was profound. Recent promising work at the Royal Darwin Hospital conducting a placebo controlled double blind randomised controlled trail had shown promising results from the use of Ondansetron wafers. These have recently dropped in price significantly, and are a safe, cost effective method of nausea control in children in mass treatment of gastroenteritis without the need for i/v fluids or naso-gastric tubes. Reporting of the success of this method of rehydration may change humanitarian response protocols for gastroenteritis outbreaks in children.

Mid-upper arm circumference measurements (MUAC)
MUAC is a standard approach to mass screening of children between 6 and 59 months of age for malnutrition, using the principle that the circumference of the upper arm remains relatively constant between these ages. Well validated scoring

systems have been reported, with a MUAC of less than 110mm indicative of severe malnutrition. Management of mass screening and reporting of all serious cases to the nutrition cluster enabled up to 10 children per day to be followed up by relevant NGOs dealing with children's malnutrition.

Worming
Mass worming initiatives have been shown effective in remote Australian communities, and in humanitarian initiatives. Clinical improvements in weight and height for age measurements (approaching the 50th centile) have been reported, as have rates of anaemia and lethargy. Over 8,000 people were wormed during the JTF 636 mission that may provide a lasting legacy of decreased parasite load and improved general health and well being, particularly in children.

Malarial treatment
Mass testing for malaria of over 6,000 patients, using Rapid Detection Test (RDT) kits, and the treatment of over 2,000 cases of positive or suspected malaria is unprecedented in Australian military or civilian responses. The use of RDTs on a mass scale, appropriate treatment in a region with high chloroquine resistant P. Falciparum, and the reporting of changing trends in malaria and other diseases to the "Disease Early Warning System" and the WHO led health cluster, will be discussed as a model for future deployments.

Conclusion: The medical mission Operation Pakistan Assist 2 should be celebrated as a successful mission with multiple valuable lessons and models to learn from for future civilian and military (or combined) humanitarian missions representing the Australian government.

Key Words: Humanitarian, disaster, gastroenteritis, malaria, MUAC, Ondansetron, Pakistan

UNDERSTANDING THE MILITARY REHABILITATION AND COMPENSATION ACT 2004 AND ITS INFLUENCE ON THE REHABILITATION PHILOSOPHY OF THE DEPARTMENT OF VETERANS' AFFAIRS AND DEFENCE

MICHAEL ARMITAGE

Mike currently works with the Department of Veterans' Affairs (DVA)and is responsible for a wide range of internal and external communication mediums and liaison with government and private organisations in the compensation, rehabilitation and health areas.

In this role, Mike has been involved in developing a range of rehabilitation related initiatives associated with the implementation of the Military Rehabilitation and Compensation Act 2004 and contemporary compensation and repatriation legislation. This association commenced within a training role for DVA staff and members of Ex-Service Organisations and now extends to ongoing support for rehabilitation business areas within DVA, provider education through business improvement, implementation of research project outcomes and improved internal and external communications around rehabilitation.

The Military Rehabilitation and Compensation Act 2004 (MRCA) replaced the rehabilitation, treatment and compensation provided by the Veterans' Entitlements Act 1986 and the Safety, Rehabilitation and Compensation Act 1988 for injury disease and death from ADF service on or after 1 July 2004.

The MRCA covers permanent and reserve Australian Defence Force members, cadets, cadet officers, instructors and discharged members. The legislation mandates both the Department of Defence (for full time serving members) and the Department of Veterans' Affairs (current serving part time and discharged members) to play an integral role in the provision of rehabilitation services.

The MRCA focuses on the provision of rehabilitation services to assist members who suffer from a service-related injury or disease make as full a recovery as possible and return to their normal service duties or, after discharge, civilian work if they are able, and usual daily, family and community activities. MRCA rehabilitation provisions align with the World Health Organisation's generic biopsychosocial model in management of people with injuries and provides a client centred platform from which the ADF, DVA and the service providers now operate.

Defence is unique as they provide rehabilitation services and programs to their members for non-work related injuries. They also provide resettlement assistance, education and training and transition services to assist members discharging from the services.

The Department of Veterans' Affairs delivers a consistent range of rehabilitation activities for all client groups. Rehabilitation services incorporate medical, psychosocial and vocational, rehabilitation activities.

This presentation will identify and promote the whole of department approach to rehabilitation, a client-centred model of injury management, and how the work of Defence and DVA is complimentary to the recovery of the injured worker.

INTERNATIONAL HUMANITARIAN LAW / LAW OF ARMED CONFLICT. BLACK, WHITE OR SHADES OF GREY? WHY SHOULD THIS CONCERN MEDICAL PERSONNEL?

DR DAVID THOMPSON

M*ajor David Thompson is a Reserve General Practitioner posted to 1st Hlth Spt Coy, 3HSB. His operational service includes two deployments to Afghanistan: 1stly, as part of the forward rotary-wing aero-medical evacuation team, Kandahar; and 2ndly as the Regimental Medical Officer (RMO) to Reconstruction Task Force 3, Tarin Kowt. He has also deployed as RMO to the Force Level Logistic Asset 5, Kuwait and as MO, Resuscitation Team, Timor Leste. David works as a Contract Health Practitioner to the ADF at Kuttabul Hlth Centre, and the Navy Ward, St Vincent's Hospital. He is married with a 6 yr old daughter and 2 yr old son. He has a particular interest in the complexity of 'medico-legal-ethical' issues encountered by medical personnel on operational service.*

Introduction: Medical personnel on deployment today are not uncommonly faced with medico-legal/ethical dilemmas. It has been said that in this modern era of asymmetric warfare that some of the rules of 'International Humanitarian Law' (IHL) are irrelevant, out of date, too idealistic, or just too vague. This paper's hypothesis is that the converse is true: IHL is explicit in relation to how medical personnel should act during armed conflicts. To act counter to IHL places the MO in an unethical and potentially unlawful position.

Background: IHL, also called the 'Law of Armed Conflict', is a special branch of law governing situations of armed conflict, i.e. war. The main purpose of IHL is to mitigate the suffering caused by war. It regulates the conduct of parties to an armed conflict and provides protection to those most affected. It governs the behaviour and conduct of both combatants and non-combatants. Within IHL there are specific rules relating to medical personnel.

IHL has been gradually formulated over the years and its main advocate is the International Committee of the Red Cross. IHL stems from both customary international law and international conferences and treaties, in particular the 1949 Geneva Conventions and the 1977 Additional Protocols.

The Australian parliament has incorporated IHL into domestic law. It is binding on all Australian citizens.

Comments: This paper will draw on deployment experiences to provide scenario-based discussion. There will be examples in which medical personnel (MO's) are confronted with real-life situations and must decide on the appropriate ethical/ legal route to follow. Some decisions are 'black and white'… others are 'shades of grey'. In some cases the MO acts correctly, yet in other cases he/she acts contrary to IHL. The MO may realise that he/she has crossed a 'fine line' and provides excuses as to why IHL was not followed. E.g. 'I did not follow IHL because it is irrelevant in this type of conflict', 'I was following orders', or 'the enemy does not abide by IHL so I do not need to'. Sometimes the MO himself does not even realize he is acting incorrectly.

The paper demonstrates that IHL provides rules and guidance on how medical personnel are to act. However at times IHL is ignored. This is at best due to ignorance,

at worst it is illegal. This paper explores possible reasons why medical personnel may act not in accordance with IHL. Suggestions are then offered to ensure better compliance with IHL.

Conclusion : This paper raises some serious concerns relating to the understanding of IHL in regards to medical personnel. The problem lies 'not in the rules but in how the game is played'.

To act counter to the rules of IHL places the MO on the 'slippery slope' of declining moral and ethical standards and into potentially dire consequences. This would affect not just the individual MO but the Defence Force and nation as a whole.

Key Words: International Humanitarian , Law of Armed Conflict., Geneva Convention, Additional Protocols, International Committee of the Red Cross, medical personnel

MANAGING A DEFENCE MEMBER SUSPECTED OF MALINGERING. A DISCUSSION OF THE LEGAL AND ETHICAL ISSUES FOR THE FRONTLINE MEDICAL OFFICER

MICHAEL CLEMENTS

SQNLDR Michael Clements is currently posted to 1 Expeditionary Health Services Detachment Townsville as the Senior Medical Officer and the Officer in Charge of Townsville Health Centre. He joined the RAAF as a member of the Graduate Medical Scheme and has worked at RAAF Tindal, prior to posting to the United Kingdom for the Diploma in Aviation Medicine Kings College London. Deployments include Operation Resolute and Operation Slipper in 2009. He is currently engaged in training towards a Fellowship with the Australasian Faculty of Occupational and Environmental Medicine and is also a keen private pilot who spends as much of his spare time as possible flying in the tropical Whitsundays.

Throughout their careers doctors are exposed to patients whom they believe may be miss-representing the true nature of their illness or disabilities for purposes of personal gain. This is often seen in the context of drug seeking behavior or in relation to compensation claims where the patient benefits in some way from eliciting a certain reaction from the doctor.

The Defence Force Discipline Act specifies that malingering is an offence and as such the member may be subject to punishment if such a charge is upheld. For the frontline military medical officers there is difficulty in navigating the legal and ethical minefield that occurs when balancing their responsibilities to the patient and their responsibility to the Commonwealth.

If multiple doctors were exposed to the same malingering behavior we are likely to see a variety of outcomes that are based on the doctors own moral and ethical values, their perceived risk of adverse legal action and their sense of responsibility to the Commonwealth. The powers that the Australian Defence Force Investigate Service have in requesting Medical In Confidence information and compelling witnesses to make statements puts the medical officer in further uncomfortable territory.

In trying to resolve their own sense of responsibility the author outlines some of the difficulties faced in a particular example. The author highlights some of the

contradictory advice resulting from discussions with ADFIS, senior colleagues, ADF Legal Officers, the Civil Aviation Safety Authority, Department of Veteran's Affairs, civilian Medico Legal protection services and the chain of command.

The astute and conscientious medical officer therefore needs to be well aware of the consequences of managing a patient suspected of malingering and needs to understand the complex legal and ethical environment they will find themselves in. Unfortunately there is no prescriptive answer that will provide Medical Officers with a standardised approach to the suspected malinger and therefore careful consideration of all of the issues must be encouraged.

Key Words: Malingering, Defence Force Discipline Act, Ethics, Medical Officer

SIGNING MEDICAL DOCUMENTS – WHAT ARE THE LEGAL PITFALLS?

BRENT BARKER

SQNLDR Barker is currently Commanding Officer, RAAF Institute of Aviation Medicine, RAAF Edinburgh, South Australia. He has a background in pharmacy, epidemiology, general practice and completed the Diploma of Aviation Medicine in the UK in 2009.

During the workup for a Medical Employment Category Review Board, AVMED discovered in the member's medical records conflicting information signed by the same doctor – one document clearly identified a long clinical history with, a recent hospital admission and trial of medication, and a plethora of specialist reviews; the other document (completed by the member but signed by the doctor) failed to disclose any of this recent clinical history. This presentation will discuss the legal responsibilities of doctors when they sign health declaration documents, and discuss some of the medico-legal and ethical issues that this case raised.

Key Words: Medicolegal, ethics

THE IMPULSE NOISE HAZARD: DETECTING EARLY NOISE INDUCED HEARING LOSS IN THE MILITARY SETTING

DAVID MCBRIDE

Dr David McBride is an Occupational Physician and primarily an academic, but is currently a full time Medical Officer with the New Zealand Army, baseed in Christchurch. His special research area is noise and vibration, particularly the effects of impulse noise which formed the basis of his PhD thesis.

Noise induced hearing loss (NIHL) remains prevalent in military populations, primarily because of impulse noise exposure, which can have capricious and unpredictable effects. The primary means of impulse noise reduction is by way of minimisation through the use of hearing protective devices (HPDs): earmuffs, earplugs or both. There are a number of reasons why HPD can fail, poor protection factors due to the low frequency noise spectrum of weapons systems; the acoustics of the impulse; high levels of impulse noise; poor fit (especially of ear plugs) and displacement of HPDs with activity. Poor fit of ear plugs is a major problem, data suggesting that a few as 20-30% of individuals, even in ideal circumstances, can achieve a good seal.

Because of the high risk of NIHL, it is essential to monitor both the noise environment and the health of the individual. Strictly speaking, assessing and monitoring the noise hazard requires knowledge of the peak impulse level and duration, but can be approximated by the "level equivalent" in dB(A). A typical Annual Weapons Qualification (AWQ) shoot on the Steyr requires the rifleman to shoot approximately 100 rounds, the average noise level being 98-100 dB(A) over 15 minutes. Unprotected exposure on an AWQ would give a Temporary Threshold Shift (TTS) in hearing of 26 dB Hearing Level (HL) in the average individual and 39 dB HL in the 5% of individuals most sensitive to noise. TTS of less than 30 dB HL should recover in 24 hours but if the loss is more than this it may not recover fully, leading to a an annual shift in hearing threshold in the order of 2-3 dB HL. Traditionally, health surveillance in the form of annual pure tone audiometric testing has been performed in order to detect this hearing loss. As pure tone audiometry has a test-retest standard deviation in the order of 3-6 dB HL the change will however go undetected with this annual test.

The possible solution to this problem lies in pure-tone "monitoring" audiometry. This is designed to detect TTS and must be carried out directly after the noise exposure occurs, as it is at a maximum 2 minutes after the noise ceases. This poses logistic problems in terms of providing a mobile audiometric facility, but will detect the typical 30 dB HL change due to noise exposure if it does occur. Administrative action such as a review of HPD fit can then be carried out.

Otoacoustic Emissions (OAEs) are spontaneous emissions from the cochlea. A reduction in OAE amplitude after noise exposure is thought to be a sensitive indicator of incipient cochlear damage. The test is rapid, non-behavioural in nature and shows promise as a rapid screening tool.

The results of a feasibility study will be presented in the session, including fit testing of the "SureFire" ear plugs and a

field survey of both monitoring audiometry and otoacoustic emissions.

Key Words: Hearing loss, noise induced, Impulse noise, Surveillance, Audiometry., Otoacoustic emissions.

USING EARPLUGS FOR NOISE PROTECTION – IS DEFENCE MEETING ITS 'DUTY OF CARE' TO PREVENT NOISE-INDUCED HEARING LOSS?

ADRIAN SMITH

Dr Adrian Smith is an aviation medicine specialist contracted to support Army Aviation operations through the RAAF Institute of Aviation Medicine. He completed his Diploma in Aviation Medicine (UK) in 2001, Masters of Aerospace Medicine with Honours in 2006, and is currently completing his doctoral thesis. He is a Member of the International Academy of Aviation and Space Medicine, and a Fellow of the Royal Aeronautical Society.

Hearing loss is a costly, but preventable occupational hazard. The use of earplugs for hearing protection is ubiquitous in aviation industries (both military and civil), but unfortunately many people wear earplugs without adequate training. This presentation will report three studies undertaken by AVMED which examine the real-world attenuation of earplugs. Two studies have looked at the effectiveness of foam earplugs in the hands of untrained users - despite the earplugs having an SLC-80 rating of 25 dB, their real-world attenuation in two separate studies was less than 15 dB. In another study, AVMED looked at the noise attenuation of custom-moulded silicone earplugs. Even though these earplugs had an SLC-80 rating of 26 dB, their real-world attenuation was only 13 dB when worn by people unfamiliar with their use. Together, these three studies illustrate the pitfalls with using PPE without adequate training. Even though foam earplugs and custom-moulded earplugs might seem simple to use, they can provide a level of hearing protection much lower than advertised. Aircrew who wear earplugs without proper training may be overexposed to potentially-hazardous levels of noise. This paper will discuss the importance of providing a robust training and education programme to maximise the benefits that aircrew will receive from wearing earplugs, and will also discuss the selection of earplugs most appropriate for a given work environment, in order to explore the extent to which Defence is meeting its duty of care in the prevention of hearing loss.

Key Words: Noise-induced hearing loss, earplugs, deafness

PREDICTING MAINTENANCE ERRORS WITH ORGANISATIONAL SAFETY CLIMATE AND FATIGUE FACTORS

DR ROBERT FORSTER-LEE

Dr Forster-Lee is the Aviation Psychologist for the Head Quarters Fleet Air Arm of the Royal Australian Navy. His role within the Safety Cell entails his evaluation of the Safety Attitudes, Mental Health, and aspects of Individual Differences that influence capability and performance of Aircrew and Maintenance personnel.

Introduction: Within the workplace individuals adopt organisational cultural patterns and schemas within an interactive process fostered by institutional

environments and systems (Colby, 2003). Numerous studies support the influence of Safety Attitudes on workplace behaviour (see Brown, Willis, & Prussia, 2000; Fogarty & Shaw, 2003; Nahrgang, Morgeson, & Hofmann, 2011; Probst & Brubaker, 2001). Moreover, Strahan, Watson, and Lennon (2008) recently reported that measures of safety climate predicted fatigue related behaviours. Specifically, they showed that organisational safety attitudes were predictive of fatigue-related driver behaviour. Thus, a question arises as to the exact nature of the relationship between Safety Attitudes, Fatigue, and workplace performance.

Aims: This study evaluated the applicability of the CIS-20 subscales of fatigue and safety attitudes of Organisational Safety, Perceived Workplace Pressure, Unsafe Workplace Behaviours, and Unsafe Workplace Norms in predicting reported workplace errors and (2) the ability of the Safety Attitudes factors in predicting levels of Fatigue.

Participants and Materials: Participants were 41 females and 559 males, ranging in age from 19 to 54 years (M = 28.07, S.D. = 8.3), working as Royal Australian Navy Maintainers based at HMAS Albatross in Nowra NSW assessed annually from 2008 to 2010. The self-report safety questionnaire comprised: a) demographic information; (b) a 60-item Safety Attitudes Questionnaire developed from the Fogarty and Shaw (2003) Safety Scale; (c) 10-items assessing the rates of typical errors at work; and (d) the CIS-20-R.

Results: As anticipated, the Safety Factors and CIS fatigue subscales contributed in predicting error rates. While all of the Safety Factors contributed to varying errors, the Unsafe Workplace Norms predicted all error types with Personal Unsafe Behaviours involved in 9 of the 10 error types. The Organisational Safety factor was predicted 4 error types and Perceived Workplace Pressure was limited to one error occurrence. The fatigue subscales contributed to the prediction of 8 of the 10 error types. The Subscales of diminished Concentration and Physical Activity were involved in 4 of the error types while Motivation contributed to 3 errors and Subjective fatigue was associated with a single error type. The Safety factors were found to predict the elements comprising the Fatigue Scale. The Attitudes accounted for 14% of the variance for Subjective Fatigue, 9% of the variance for reduced Motivation, 13% of the variance for reduced Concentration, and 7% of the variance for reduced Physical Activity.

Discussion: The findings support the ability of Safety Attitudes and Fatigue to predict rates of workplace error among RAN Maintainers. The results lend support and extend the previous work by Fogarty and Shaw (2003) and support the factors within the sociotechnical model of Brown et al. (2000) such as pressure, perceived safety climate, cavalier attitude, and safety behaviours as these factors clearly parallel those within the RAN survey. Additionally, the assertion of Strahan et al. (2008) that one's underlying safety attitudes influence subsequent behaviours related to fatigue was corroborated. Overall, the data espouse the importance of organisational efforts at improving and maintaining safety.

Key Words: Organisational Safety Attitudes, Fatigue, Maintenance Errors

SILICONE, EARPLUGS AND LUBRICANT – AVMED'S ADVICE TO AIRCREW

ADRIAN SMITH

Dr Adrian Smith is an aviation medicine specialist contracted to support Army Aviation operations through the RAAF Institute of Aviation Medicine. He completed his Diploma in Aviation Medicine (UK) in 2001, Masters of Aerospace Medicine with Honours in 2006, and is currently completing his doctoral thesis. He is a Member of the International Academy of Aviation and Space Medicine, and a Fellow of the Royal Aeronautical Society.

Background: The RAAF Institute of Aviation Medicine was tasked to evaluate the attenuation provided by the moulded communications earpiece (m-CEP) acquired by the RAN for use by its aircrew, and also to determine the impact (if any) of using an earplug lubricant to insert the m-CEPs. Method. AVMED determined the threshold of hearing with pure-tone audiometry at eight test frequencies between 500 Hz and 8000 Hz in each of four test conditions – baseline, standard CEP, dry-inserted m-CEP, and wet-inserted m-CEP (i.e. lubricated before insertion).

Results: The overall attenuation of dry-inserted m-CEPs (SLC80 28 dB) is greater than standard foam-tipped CEPs (SLC80 24 dB). Overall, lubricated earplugs provide greater attenuation than dry-inserted m-CEPs (SLC80 30 dB and 28 dB, respectively). The use of lubricant increases the attenuation of dry-inserted m-CEPs by 2-6 dB at every frequency. This study found that the m-CEPs that exhibited the greatest improvement in attenuation when lubricated had the lowest dry-inserted attenuation.

Discussion: Earplug lubricant appears to provide additional attenuation to m-CEPs, possibly by acting as an 'acoustic seal'.

Recommendation: Aircrew should be encouraged to use an approved lubricant to insert their moulded earplugs.

Key Words: Noise-induced hearing loss, hearing protection, earplugs, mCEPs.

FROM THE FALKLANDS TO AFGHANISTAN AND BEYOND – WHAT HAVE WE LEARNT?

JIM RYAN

The period 1982 – 2011 covers nearly 30 years during which there has been exponential growth and global spread of war and conflict.

This paper begins by reviewing the Falklands war of April – June 1982. Although not recognised at the time the war was to be a watershed, at least in medical terms. The Navy and Army deployed teams were lightly equipped, lean and austere and would have been easily recognised by an earlier generation of military surgeons working in field medical facilities during the Boer war, World Wars I and II.

Although an unplanned and unexpected event military medical planners applied conventional NATO doctrine which had evolved to provide medical support for full-scale conventional (and possibly nuclear) warfare in Central Europe. The Falklands war was outside planning and the medical support provided was largely planned on the hoof, particularly following the loss of the Atlantic Conveyor carrying most of the filed hospital equipment and support helicopters.

What was learnt as a result of this war? I guess the most important lesson was that to impact on morbidity and mortality it is necessary for early access to the casualty, field stabilisation and rapid evacuation to resuscitation and surgery placed as close as tactically possible to the point of wounding. Early access and evacuation was usually not possible during night battles in mountainous terrain and there were no dedicated support helicopters. The result was late evacuation to resus and surgery resulting in very few of the severely injured reaching field surgery alive (Chest, Abdomen and Head) which led to a very low hospital mortality, but with a high pre-hospital mortality. This paradox was not immediately recognised leading to an exaggerated view of the excellence of medical care. The message is – you must have means to access casualties early, provide high quality trauma life support and apply accurate triage resulting in evacuation rearward by priority.

A further lesson was that a conventional medical doctrine for a war in Europe would not fit modern expeditionary warfare.

This has led to a gradual evolution in thinking over the following decades forged in a wide variety of operational setting in such far-flung places as the Northern Ireland, Balkans, Sierra Leone and the first Gulf war. This process reached its apogee during the recent war in Iraq and currently in Afghanistan.

The main emphasis in this paper is the standard of care that has been evolved in the British led international Coalition Field Hospital in Camp Bastion, Helmland Province, Afghanistan.

The paper will examine the changes that have taken place over the last 10 years under three main headings:

Doctrine, Preparation and Training

Clinical care and support, including MERT, Damage control resuscitation, Damage control surgery, Field Intensive Care and Evacuation in a airborne critical acre environment, and finally, on going care in UK, including rehabilitation

Governance, Data capture, Audit & Research

The paper will show that it is all of the above in concert that has brought about a sea change in outcome for our wounded.

The paper will conclude with a peep into the future.

ADF MENTAL HEALTH STRATEGY – OVERVIEW OF THE LAST TEN YEARS AND INTO THE FUTURE

DAVID MORTON, CAROLE WINDLEY

In 2002, the ADF introduced the ADF Mental Health Strategy which provided a framework for service delivery and the development of innovative programs but did not significantly increase the actual mental health workforce. The government directed review into 'Mental Health Care in the ADF and Transition to Discharge', conducted by Professor David Dunt, completed in February 2009, identified that due to the increase operational tempo in the ADF there were gaps in the delivery of mental health care for members. In response to the Dunt Review, Defence has embarked on the Mental Health Reform Process which seeks to implement the recommendations arising from the review, to better meet the mental health needs of ADF members.

This paper provides an overview of the evolution of the Mental Health Strategy over the past ten years, the current status of the Mental Health Reform Process and the strategic direction for the future development of the ADF Mental Health Strategy.

Key Words: Mental Health Reform Process

THE ADF ALCOHOL MANAGEMENT STRATEGY

JENNIFER HARLAND

Jennifer is the Assistant Director Alcohol, Tobacco and other Drugs program based in Joint Health Command, Canberra. Jennifer's diverse Nursing career spans 25 years and she has post-graduate qualifications in Intensive Care, Mental Health and holds a Masters Degree in Applied Ethics. Jennifer has worked in a variety of Drug and Alcohol settings and teaches in the off-shore program (Hong Kong) for the University of Wollongong.

Jennifer is in the final year of the International Program of Addiction Studies (a collaborative program through Kings College – London, Virginia Commonwealth University – USA and the University of Adelaide).

The ADF Alcohol, Tobacco and Other Drug Program was developed as part of the 2002 ADF Mental Health Strategy. The program is consistent with national policy, is evidence based and primarily aims to address alcohol related harm in the ADF. Since 2002, the focus has been on:

- developing an effective education and training program that is responsive to the needs of all groups within the ADF
- delivering clinical interventions that are evidence based
- developing a comprehensive policy framework that addresses the needs of Navy, Army and Air Force
- challenging the culture around alcohol within Defence

One constant challenge has been resourcing of the ATOD Program, with varying amounts of support over the last decade. This paper provides an overview of the development of the ATOD Program since 2002, including initiatives that are currently in place and planned for the future to ensure that approaches used by Defence are consistent with the latest research and developments in best-

practice.

Key Words: Mental health, Alcohol Management Strategy

ADF SUICIDE PREVENTION PROGRAM

MICHELLE MCINNES

The prevention of mental health conditions and suicide in ADF members is taken very seriously by Defence. A range of strategies have been in place since the inception of the ADF Mental Health Strategy in 2002, to identify those members who may be at risk of developing mental health conditions in the aftermath of critical incidents, and those members who may be at risk of suicide.

This paper addresses the evolution of the Early Intervention and Suicide Prevention Program in the ADF, and initiatives that are currently in place and planned for the future to ensure that approaches used by Defence are consistent with the latest research and developments in best-practice.

Key Words: Mental Health, suicide prevention

MENTAL HEALTH SERVICE DELIVERY IN ACTION – PROGRESS, PARTNERSHIPS AND PRIORITIES

MS KAREN GREEN, DR PHILIP SIEBLER

Karen is a Social Worker with over 20 years experience in a variety of health and welfare settings in various states of Australia. For more than a decade, she has worked with Defence personnel, veterans and families, and has a strong interest in ensuring that the emotional and mental health needs of ADF members and families are considered holistically and from a multi-disciplinary team perspective.

Philip has been employed as a social worker for over 15 years. He is an accredited Mental Health Social Worker and Clinical Family Therapist. His positions have spanned managing an adolescent residential care centre, family/crisis work in an intensive 24/7 family centred service, school-focused social work, and social work with military personnel and their families. Philip joined the Department of Defence as a social worker in 1997 and is currently employed as the Coordinator of the Regional Mental Health Team in Joint Health Command, a position which spans Victoria and Tasmania. In 2009, Philip completed his PhD in social work at Monash University. The thesis was titled: 'Military people won't ask for help': Experiences of Deployment of Australian Defence Force Personnel, their Families, and Implications for Social Work. His PhD research is the first in Australia to inquire into what the experience of deployment was like for Australian Defence Force members and their families before, during and after an overseas deployment.

Military mental health problems have been colloquially described in terms such as the 'invisible wounds of war', since in comparison to physical health injuries they are often invisible to Command, Service members, their families and society. Since the recommendation of Professor Dunt's

'Review of Mental Health Care in the ADF and Transition through Discharge' were publicly released in 2009, extensive reform work has been undertaken at national, regional and local levels to ensure that the issue of mental health remains visible, and a high priority for Commanders, Defence personnel and their families. This paper will focus on the recommendation that lead to the development and implementation of Regional Mental Health teams (units) across eight regions in Australia. The role of the RMHTs' achievements to date, partnerships and priorities will outlined to demonstrate how the RMHT outputs will proactively and positively contribute enhancing the future of mental health in the Australian military context.

Key Words: Mental health service delivery, Regional Mental Health Teams

DAMAGE CONTROL RESUSCITATION OF THE EXSANGUINATING TRAUMA PATIENT: PATHOPHYSIOLOGY AND BASIC PRINCIPLES

EAMON RAITH, DR. CLAIRE FRAUENFELDER, A/PROF WILLIAM GRIGGS

Eamon Raith is a Final-Year Medical Student at the University of Adelaide and a former member of the RAAF Active Reserve, with which he served between 2004 and 2007. He has an active interest in surgery and trauma, and from 2007 to 2009 was the inaugural Chief of Experimental Cardiothoracic Surgery at the Royal Adelaide Hospital. In 2009 he won the University of Adelaide Archibald Watson Prize for Surgery for an earlier presentation on damage control resuscitation. He is continuing research into damage control resuscitation, and is also active in both pre-clinical and clinical teaching at the University of Adelaide.

Damage Control Resuscitation (DCR) is a systematic approach to major exsanguinating trauma incorporating strategies of permissive hypotension, haemostatic resuscitation and damage control surgery. This presentation reviews current literature regarding the pathophysiology of massive haemorrhage: the "lethal triad" of coagulopathy, acidosis and hypothermia, and integrates this with an introduction to the components of DCR.

Key Words: Trauma, Damage Control Resuscitation, Emergency Medicine

COMBAT FIRST AIDERS IN AFGHANISTAN – THE MTF-1 EXPERIENCE

ANDREW WHITWORTH

Major Andrew Whitworth BE (Hons) MBBS FRACGP enlisted in the Royal Australian Air Force in January 1993 as an Officer Cadet, and worked as an Aeronautical Engineer until 2001, when he transferred to the Australian Regular Army. Completing his medical degree at University of Queensland in 2005 under the Graduate Medical Scheme, MAJ Whitworth spent two years as a junior medical officer at Toowoomba Base Hospital. He returned to full-time service in 2008 as a medical officer, with postings to 2nd Health Support Battalion, 2nd/14th Light Horse Regiment and most recently to 7th Combat Service Support Battalion, where he is currently the Senior Medical Officer. MAJ Whitworth deployed to Afghanistan in 2010 as the medical officer for Mentoring Task Force One. His interests include aviation and occupational medicine, and he is completing a Masters in Public Health through the Centre for Military and Veterans' Health.

Combat First Aiders have been a vital part of the initial care provided to injured soldiers within Army units for many years. Unlike medics, nurses or doctors, combat first aiders perform primary treatment of injured colleagues as a secondary duty. They all have primary duties outside of medical care, and have been chosen or nominated to undergo 2 or 3 week training in more advanced first-aid, including management of shock, anaphylaxis and dehydration, as well initial treatment of battle casualties. Maintenance of skills is very much dependent on individual

motivation and unit support.

Recent operational experience in Afghanistan has involved ADF troops being exposed to significant battle and non-battle casualties. In many cases, the immediate medical support available has been minimal due to geography and operational necessity. While more advanced resuscitation and initial wound surgery provided by Australian and coalition medical personnel is available in Tarin Kowt and Kandahar, the actions of the combat first aiders has been critical in improving the clinical outcomes of those ADF, coalition and local battle casualties encountered in Uruzghan province. Combat first aiders are usually the "first-responders" to any trauma, and as the cases to be discussed show, have shown great ability despite limited clinical experience.

The pre-deployment training provided to medical personnel, including combat first aiders, involved a series of clinical scenario-based exercises called "Primary Survey". Tactical care of combat casualty/ care under fire principles first developed by British and other coalition militaries have been incorporated into training first responders in the treatment of realistic battle injuries that could be expected in Afghanistan. The "Primary Survey" exercises served to allow the spectrum of medical support elements, from combat first aiders and medics through to the resuscitation team to train effectively together in the roles they would fill on deployment, something that is often lacking in traditional pre-deployment mission rehearsal exercises.

Two incidents that occurred in Afghanistan during the MTF-1 deployment stand out as examples of the fantastic work done by the combat first aiders. The first involved an IED strike on a Bushmaster Protected Mobility Vehicle, where the work of the combat first aiders ensured the rapid treatment and stabilisation of their colleagues, despite some suffering extremely traumatic injuries. The second involved a suicide IED strike in a local market-place. Unfortunately, only one local national survived to evacuation from the point of injury; however, the work of the combat first aiders under the supervision of the patrol base medic was remarkable as the clinical case will show.

MTF-1 experienced the highest rate of contacts and combat casualties by a conventional formed body of troops since Vietnam. Thus, the role of combat first aiders became critical, and as shown by their performance, validated the current high level of training provided pre-deployment.

PILOT AUSTRALIAN DEFENCE FORCE MILITARY SURGICAL TEAM AT ROYAL BRISBANE AND WOMEN'S HOSPITAL

AMANDA DINES, ALISON THOMAS, DAVID MCMAUGH, CLIFF POLLARD

Dr Amanda Dines is the Deputy Executive Director Medical Services at the Royal Brisbane and Women's Hospital. She is a medical practitioner with a Masters in Public Health from Harvard, and holds fellowships of the Royal Australasian Colleges of Medical Administrators and General Practice. Dr Dines served in the Royal Australian Air Force as a Medical Officer for 24 years, during which time she deployed on operational service to Iraq and

East Timor. She is currently a Group Captain in the Royal Australia Air Force Specialist Reserve.

A Pilot Project to establish an ADF Military Surgical Team is being implemented at the Royal Brisbane and Women's Hospital.

The ADF Military Surgical Team will comprise five specialist positions in: emergency medicine, general surgery, orthopaedics, anaesthesia; and intensive care. Each Member of the ADF Military Surgical Team will be a member of the Reserve Force and will be released from their duties at the RBWH to undertake Defence Service as required by the ADF for up to 16 weeks per year.

At the RBWH, members of the ADF Military Surgical Team will develop their clinical skills as individuals and as a team, with a clear focus on a trauma based approach to clinical practice. The ADF Military Surgical Team will be integrated within the RBWH clinical team; be involved in the delivery of training to ADF personnel on secondment to the Hospital; and be involved in research and teaching.

During military service, the ADF MST will contribute to and enhance the ADF's health support capability on military and humanitarian operations and exercises.

The presentation will discuss the development, implementation and key outcomes of the pilot project.

Key Words: Operational Health Support; Trauma; Surgery; Military Civilian Collaboration

MAXILLOFACIAL TRAUMA: LESSONS LEARNED FROM THE CIVILIAN FRONTLINE AT JOHN HUNTER HOSPITAL, NEWCASTLE

BARRY REED

Dr Barry Reed is a Specialist Oral and Maxillofacial Surgeon John Hunter Hospital, Newcastle since 1991; Clinical Lecturer School Of Medicine, University of Newcastle since 1992; Accredited visiting specialist to five Newcastle and Hunter Valley hospitals; currently Oral and Maxillofacial Surgeon Australian Army Reserve 3rd Health Support Battalion since 2011 and formerly 1st Health Support Battalion since 2008; Colonel Kenny Award as best Army Reserve Dental Officer in 2008 for achievements at AACAP dental program at Doomadgee and for an official visit to Brooke Army Medical Center San Antonio Texas in 2008 in regard to management of facial injuries from improvised explosive devices and other ballistic trauma; Award of a Australian Army History Research Unit grant in 2009 on medical aspects of the Kokoda Campaign; Oral and Maxillofacial Surgeon at Exercise Talisman Sabre 2009 and 2011; Oral and Maxillofacial Surgeon AACAP 18 Fitzroy Crossing, 2011; Lecturer on military maxillofacial trauma for the triservice Dental Officer Initial Course HMAS Cerberus since 2007; invited lecturer on ballistic maxillofacial trauma to several international meetings; author of journal articles on management of maxillofacial ballistic trauma; Foundation Clinical Director Oral and Maxillofacial Surgery Unit John Hunter Hospital 1992 – 1995.

The essential features of maxillofacial trauma management will be described and

illustrated by a series of clinical cases from twenty years experience as a consultant maxillofacial surgeon at John Hunter Hospital, Newcastle. John Hunter Hospital is one of the busiest hospitals in Australia for management of maxillofacial trauma. The most common mechanisms of injury include assaults, sports related injuries and motor vehicle accidents. This presentation will include clinical assessment and radiographic interpretation for maxillofacial trauma, methods of airway management for facial injuries, control of facial and oral haemorrhage, management of vision threatening injuries, surgical approaches, fracture management methods, and principles for ensuring correct management of oral and facial soft tissue wounds. Clinical cases will include severely displaced and panfacial fractures, a facial and oral blast wound requiring complex soft and hard tissue management, control of haemorrhage from a "glassing" assault, management of life threatening orofacial necrotizing fasciitis from an assault, management of facial gunshot wounds, assessment of orbital fracture patients and facial and oral soft tissue wound cases.

Key Words: Maxillofacial trauma, management, clinical cases

PRESENTING AT SCIENTIFIC CONFERENCES – WHO COMPLIES WITH THE DEFENCE POLICIES?

BRENT BARKER, SMITH A

SQNLDR Barker is currently Commanding Officer, RAAF Institute of Aviation Medicine, RAAF Edinburgh, South Australia. He has a background in pharmacy, epidemiology, general practice and completed the Diploma of Aviation Medicine in the UK in 2009.

The RAAF Institute of Aviation Medicine is a centre of excellence in its field. During the last 5 years, AVMED staff have delivered approximately 100 scientific presentations at non-Defence conferences in Australia and internationally, and had 15 papers published in scientific journals, completely oblivious to its responsibilities under DI(G) ADMIN 8-1 and Health Manual Vol 23. This oversight might be common amongst Defence health personnel who present at scientific conferences (including AMMA). This presentation will discuss the policies that govern 'public comment by Defence personnel', and detail the responsibilities and requirements of uniformed and civilian health personnel under these policies. The presentation will describe the process AVMED developed in order to meet its obligations in delivering a presentation at scientific conferences. This presentation has been cleared, approved, and endorsed for public discussion.

Key Words: Governance, security

ADAPTING COMMERCIAL EQUIPMENT SOLUTIONS FOR DEFENCE HEALTH FACILITIES

GLENN KEYS, ANNETTE OWTTRIM

Glenn Keys is the founder and Managing Director of Aspen Medical. Glenn's career covers a broad range of businesses, from start-ups to US multinationals. After a distinguished career in the Australian Army, where he covered a range of tasks, from test flying to managing logistics support for Army aircraft, Glenn was responsible for the establishment of a number of new businesses, either as start-ups or as new business units in global corporations. In 2003 Glenn established Aspen Medical, an international healthcare services provider that specialises in the delivery of healthcare solutions in complex environments, especially those that are remote, challenging and under resourced. Aspen Medical is now one of Australia's fastest growing companies and provides out-sourced healthcare services to private and government organisations, including the Australian Defence Force.

JHC is responsible for operating defence health facilities but is not responsible for the provision or maintenance of equipment across those facilities. Whilst JHC have been nominated as the Capability Sponsor for new Defence Healthcare equipment, this does not streamline the procurement process for this equipment. However there are many equipment provision models operating in the international commercial, government and military environments that do not necessarily require the customer to own the equipment.

The presentation would highlight the top 5 commercial models utilised for a range of

different equipment, in a number of specific sectorsThe presentation will then discuss medical equipment models currently utilised across international commercial, government and military customers and discuss pros and cons for each model.

A comparative assessment will then be made against JHC medical equipment needs in Australian medical facilities, and recommendations made.

Key Words: Medical equipment models, Australian medical facilities, Maintenance of equipment

EXPERIENCE WITH AN EMERGENCY BLOOD DONOR PANEL IN THE SOLOMON ISLANDS

DR JAMES ROSS

Dr James Ross is the medical director of Aspen Medical. He is an occupational physician and public Health Physician. He servied in the RAAF from 1980 to 2006. he is the founding president of AMMA from 1991-1995.

Introduction: The Regional Assistance Mission to The Solomon Islands has been operating based in Honiara since 2004. Due to the remote location and the rare occurrence of trauma, the supply of blood products is limited, both volume and type. Recent evidence-based research suggests that the early transfusion of Warm Fresh Whole Blood (WFWB) significantly decreases mortality and morbidity in exsanguinated patients. In 2008, we introduced the concept an Emergency Blood Donor Panel (EDP), a walking donor panel, in our project in the Solomon Islands. The EDP is fully integrated into our trauma and emergency systems and should provide us with WFWB, if indicated. The EDP register runs with 80 to 100 donors with different blood groups who are regularly re-screened for donor and recipient safety.

Study Objective: This study will be structured as a descriptive report that will provide insight in the creation and management of an EDP in remote locationsas an integrative part of emergency systems. We concentrate on logistical and training-related questions as well as on details of daily EDP management.

Motivation: We believe that our EDP system is unique. It might serve as template for similar missions around the globe.

Methods: Retrospective data in the form of donor registers are availableback to 2008. Considerable information covering donor numbers, blood group diversification, screening process, EDP maintenance, training exercises and donor satisfaction can be used.

Results: The management of an Emergency Donor panel to make it practical and safe will be described.

Conclusion: We expect this study to be a significant and beneficial contribution to the current body of knowledge in transfusion and emergency medicine in remote locations.

PREPARING FOR DEPLOYMENTS – DEVELOPING PERSONAL RESILIENCE

GLENN KEYS, ANNETTE OWTTRIM

Glenn Keys is the founder and Managing Director of Aspen Medical. Glenn's career covers a broad range of businesses, from

start-ups to US multinationals. After a distinguished career in the Australian Army, where he covered a range of tasks, from test flying to managing logistics support for Army aircraft, Glenn was responsible for the establishment of a number of new businesses, either as start-ups or as new business units in global corporations. In 2003 Glenn established Aspen Medical, an international healthcare services provider that specialises in the delivery of healthcare solutions in complex environments, especially those that are remote, challenging and under resourced. Aspen Medical is now one of Australia's fastest growing companies and provides out-sourced healthcare services to private and government organisations, including the Australian Defence Force.

Deployment cycles within the ADF fluctuate significantly from relatively few through to multiple concurrent tasks. In addition, Defence maintains levels of readiness for immediate deployment should the situation arise.

From an ADF Health Personnel perspective, preparation for deployment involves many aspects, including;

- Military preparedness;
- Technical skills currency; and
- Personal resilience.

ADF Health has developed a range of programmes which address the military preparedness and technical skills currency issues, but what can be done to develop personal resilience particularly when there are few deployments?

There are a number of definitions or ideas about the meaning. Resilience can be thought of as our ability to bounce back, or even grow, in the face of pressures and threats. The American Psychological Association defines resilience as the ability to adapt in the face of adversity, trauma or tragedy.

Management theorists and workplace psychologists focus on developing resilience to cope with workplace pressures, escalating fast paced society and social demands. Terms such as empowered; confidence; focused and organised; adaptable; proactive; energetic are often used to describe people who have resilience.

Niche companies focus on developing resilience in the workplace by conducting workshops, counselling and the like. Is this enough for the ADF?

One of the many challenges facing ADF personnel is the deployment away from normal social support structures but with the comradery and support of peers. For some, this is sufficient and allows them enough support to become resilient when faced with adverse situations. For others, it becomes apparent, only once deployed that the support available on deployment will not be sufficient, and many may suffer quietly until returning home when psychological issues may appear or the member simply discharges.

Whilst a numbers of years ago now, the UNAMIR II experience demonstrated that you can't prepare people adequately for some things – but any increased resilience must be to the benefit of both the individual and the ADF.

One potential option available to ADF Health personnel is for members – particularly those with limited deployment

experience to deploy to austere environments within Australia and challenge themselves to some of the hardships that may occur on deployments. While this occurs to some degree on Exercises, these situations do not provide the real time and real life experiences associated with working in remote communities.

Opportunities exist for nurses, doctors, dentist and allied health workers to work in remote communities, including indigenous communities to develop personal resilience.

This paper will discuss personal resilience and practical opportunities for deployment within Australia through other agencies.

Key Words: Personal resilience, Military preparedness, Technical Skills currency

A BETTER FUTURE FOR VETERANS' CHRONIC CARE

DR GRAEME KILLER

Dr Graeme Killer is the Principal Medical Adviser to the Repatriation Commission. He trained as an Occupational Physician and served for 23 years in the Royal Australia Airforce (RAAF) including overseas postings to Malaysia and the United Kingdom. He served in Malaysia during the Vietnam War and was involved in aeromedical evacuation. On his retirement from full-time Defence service in 1990, he was Director of Environment Health for the Australian Defence Force (ADF). He has been Principal Medical Adviser to the Department of Veterans' Affairs (DVA) since 1991 and has taken a leading role in departmental initiatives in the quality use of medicines. He is a Member of the Repatriation Pharmaceutical Reference Committee (RPRC), Chairman of the Editorial Committee and Consumer Reference Group for the Veterans' Medicines Advice and Therapeutic Education Services (MATES) Program. He pioneered the introduction of care planning and preventive annual health assessments for older Australians and initiated the Health Links Program between the Departments of Defence and Veterans' Affairs. He has extensive health care interests including occupational and public health and aged care. He maintains part-time clinical practice and has been personal physician to Prime Ministers Keating, Howard and Rudd and has a similar role with Government House, Canberra. He was made an Officer of the Order of Australia in 1999 for his service to the veteran community.

Earlier this year, the Department of Veterans' Affairs (DVA) launched an innovative new program for veterans with chronic and complex illness. The new Coordinated Veterans' Care (CVC) Program uses a team care approach to provide continuously planned, self managed and coordinated care in partnership with participating veterans.

The new program is a response to the ageing demographic of DVA's Gold Card holding veterans and war widows. At 30 June 2010, 67% of Gold Card holders were aged 80 and over. In the financial year 2009/10 hospitalisations were the major health expense for DVA's veterans, being 34 % of the total spend.

The four key elements to the model of care for the program are:

- *the assessment of the participant's ability to self manage*
- *the development of a patient friendly care plan that the participant uses to understand and self manage their condition*
- *the regular guidance from the nurse coordinator in monitoring and motivating the veteran*
- *the sharing of all relevant health information between all care providers for the veteran.*

Some key features of the program are:

GPs will receive monthly patient data reports listing recent treatments, medications and health related services for their participating patient.

Training in chronic disease management (based on the acclaimed Flinders Program) will be available free of charge for GPs and

nurses implementing the program.

In recognition of the impact of social isolation, the care team will explore options for reducing isolation including new social assistance services that facilitate community engagement.

The program targets the five conditions that have high rates of hospital admission and readmission for Gold Card holders: congestive heart failure, chronic obstructive pulmonary disease, coronary artery disease, pneumonia and diabetes.

Around 17,000 veterans expected to participate over 4 years- this is approximately ten percent of Gold Card holders living in the community.

DVA is in a unique position to evaluate the outcomes of the CVC Program. This is because DVA collects extensive health data on its Gold Card veterans. For example for every Gold Card holder, DVA knows:

- what medications they're on and how often they are filling their prescriptions,
- the duration of any hospitalisation and the principal diagnosis for the hospitalisation, and
- treatments from specialists, allied health and other providers.

Evaluation data will include reductions in hospital admissions, improved health outcomes, improvements in patient self management and usefulness of monthly patient reports.

DEVELOPING A FRAMEWORK FOR VETERANS HEALTH CARE: SOUTH AUSTRALIAN PERSPECTIVE

SUSAN NEUHAUS

Associate Professor Susan Neuhaus has competed 20 year working with both the Regular Army and Reserve in a number of roles; as a staff officer, commander and clinician including operational tours in Cambodia, Bougainville and Afghanistan. She was promoted Colonel in 2008 and awarded a Conspicuous Service Cross in 2009. Associate Professor Neuhaus works in full time civilian surgical practice. She remains actively involved in Veterans health issues and holds a number of advisory and Board roles. She has a strong interest in the strategic implications of operational health care and is widely published on issues of strategic and Defence health.

The profile of Australia's veteran population is changing. Recent deployments, such as East Timor, Iraq, Afghanistan, Bougainville and the Solomon Islands have provided substantial new groups of younger veterans with different experiences and health care needs to that of the older veterans. While the overall numbers of these younger veterans are not expected to be as high as the peaks representing WWII and Vietnam conflicts it is anticipated that they will present their own unique set of health issues and challenges for the health system as a result of their military service.

Current health service provision to veterans (including serving veterans) is complex with multiple agencies and transition points. While the health needs of ADF personnel are met by the Australian Government Department of Defence, post discharge, Veterans and their families may access a

mix of public, private or DVA sponsored health care. There are a number of vulnerabilities within this complex system and a need to improve planning and coordination of services. This is of particular relevance to the group of existing ADF personnel who will transition from Defence to the civilian community and also for those who have served with Reserve elements and may have no 'Defence' or DVA entitlements in relation to health care between episodes of service.

There is no system in place to identify veterans or ADF serving members accessing health services other than for financial recompense through the DVA system. The data that is currently available regarding veteran activity in the hospital system is limited to those veterans that use DVA entitlements.

It is recognised that public health services are only one component in what can be a complex health system for veterans. This paper will present the preliminary Framework for Veteran's Health Care being developed within South Australia. This Framework represents a commitment to developing partnerships with private and commonwealth funded services to ensure Australian Defence Force (ADF) members, veterans and their families have a seamless transition from Defence funded heath services to Department of Veterans Affairs (DVA) and State funded health services.

There is a clear need to develop an overarching national policy aimed at seamlessly integrating health care along the 'service to veteran' continuum and to ensure that veterans can access high quality care that recognises the unique nature and consequences of military service and to enhance the quality and delivery of health care for veterans from the perspective of patients, providers, partners, families and the broader health care system.

Key Words: Veterans, Health

COGNITIVE PROCESSING THERAPY FOR COMBAT-RELATED POSTTRAUMATIC STRESS DISORDER: A COMMUNITY BASED RANDOMIZED CONTROLLED TRIAL

DAVID FORBES, DELYTH LLOYD, VANESSA VAN BUUREN

Cognitive Processing Therapy (CPT) is currently applied in combat veteran mental health services in many countries. Although CPT appears efficacious for posttraumatic stress disorder (PTSD) in specialist settings, its effectiveness when delivered in real world clinical settings has not been tested under fully controlled conditions. This presentation reports the results of a community based trial of CPT for military-related PTSD under randomized controlled conditions; a collaboration between the Australian Centre for Posttraumatic Mental Health (ACPMH) and the Veterans and Veterans Families Counselling Service (VVCS). Fifty nine treatment-seeking veterans with military-related PTSD participated. Participants were randomly allocated to receive 12 twice- weekly 60 minute sessions of CPT or an equivalent period of usual treatment. PTSD symptoms were measured by clinical interview and self report scales at post-treatment and at 3 month follow-up. Secondary measures included scales of depression, anxiety and related co-morbidities. Intent to treat analyses found significantly greater improvement for participants receiving CPT

over usual treatment at post-treatment and 3 month follow-up. More participants receiving CPT demonstrated clinically reliable improvement in PTSD symptoms (67% vs 30%, p<0.01) and met remission criteria (29% vs 4%, p<.03) than those receiving treatment as usual. CPT also produced greater improvements in anxiety, depression, social and dyadic relationships than usual treatment. No CPT-related adverse events occurred during the trial. Participation in the research also had benefits for the staff of VVCS and has prompted plans for implementation of this treatment more broadly within the service system. In summary his trial reports the first randomized controlled trial evidence that CPT is an effective treatment for military PTSD and comorbid conditions in community settings.

Key Words: Trauma, PTSD, treatment

THE HEALTH AND WELLBEING OF FEMALE VETERANS

DR SAMANTHA CROMPVOETS

Dr Samantha Crompvoets, PhD, is a Research Fellow in the Medical School at The Australian National University. Her research has been concerned with gender and health, and contextualised in a broad sociological framework. Dr Crompvoets is currently undertaking two DVA funded projects examining gender and support needs of military personnel: 'The health and wellbeing of female veterans' and 'Exploring the future service needs of ADF Reservists'. Her previous research has explored issues of breast cancer and breast surgery, domestic violence, and sustaining the medical workforce and she has taught undergraduate and postgraduate courses on Qualitative Research Methods and the Sociology of Health and Illness.

This presentation examines health and wellbeing issues that emerged in a systematic review of the war, peacekeeping and peacemaking experiences of female veterans. Research questions that informed the search were: firstly, what is known about the experiences of female veterans, and in particular, military nurses; and secondly, what influences the perceptions of a veteran of their health and wellbeing?

Components of wellbeing that emerged included the ability to cope, ease of access to services and support, satisfaction with parenting, the effects of sexual harassment, and symptoms of PTSD (Post Traumatic Stress Disorder). Perceptions of wellbeing were both informed and challenged by the womens individual and collective identities, for example a professional identity, military identity, being a parent and being female.

There has been little research into the sense of self and identity for women in the military today. However, what we do know suggests that identity can have an impact on a woman's health and her access to services. Tensions emerge at the nexus of nurse, warrior, mother and woman and they can have adverse effects on women's health and wellbeing, inhibiting some women from seeking appropriate support.

Female nursing veterans are a group at increased risk of many mental health conditions. The increased risks are the result of the many tensions and realities of serving on a military deployment. Not only the sensory exposure to the dead and dying, but the personal, emotional conflicts

inherent in caring for the sick and wounded in a war zone.

Female veterans are a group who need health services that understand their unique needs, with well informed and appropriately trained health care providers.

CAN I GO BUNGEE JUMPING, DOC?

KYLIE HALL

Dr Kylie Hall is a Consultant Anaesthetist, predominantly in private practice in Brisbane. She is a Visiting Medical Specialist at the Royal Brisbane and Princess Alexandra Hospitals, and is a Senior Lecturer at the University of Queensland.

She has active interests in Trauma, Airway Management, Teaching, and Ophthalmological anaesthesia. She joined the RAAF on completion of her Anaesthetic training, and has enthusiastically combined her interests with Military Anaesthesia, Aeromedical Evacuation, and Aviation Medicine.

Ocular injuries from Bungee jumping may cause permanent loss of visual acuity, with consequential loss of an aviation career. Risk-taking young adults, such as military aircrew need an evidence based assessment of the risks of participating in this activity.

The following paper reviews the available case reports on ocular related injuries, their outcome, and an attempt to quantify the risk.

AIRFIELD MEDICAL RESPONSE RNZAF PERSPECTIVE

PETER HURLY

WGDCR Peter Hurly is currently the Director of Air Force Medicine for the RNZAF. He has been a member of St John Ambulance since 1964 and was involved in ambulance work and training. He trained as a pharmacist in South Africa and studied medicine obtainging his MBChB in 1983. He worked in hospital medicine and Accident and Emergency. He was a member of the South African Military Service and saw active service in South Africa. He moved to New Zealand in 1987, where he was in rural practice before joing the then He was a member of the South African Medical Serce and saw active service in South Africa. On moving to New Zealand, he joined the Royal New Zealand Army Medical Corps. He then moved to general practice in Palmerston North and took up a Reservist position with the RNZAF. He obtained a Diploma in Aviation Medicine and a certificate in Air Retrieval medicine, subsequently progressing to a Masters in Aviation medicne. He moved back into full time military medicine in 2002 and became the Director of Air Force Medicine in 2004.

Since WW1, responses by emergency services to airfield emergencies have been standard in order to provide a rapid response to the situation and save life and prevent further damage. The classic airfield response, was that of a fire tender and ambulance following behind an aircraft in trouble as it attempted to land, however effective response involves good planning, flexibility, good communications and team work. Over the years, there have been attempts to provide a satisfactory model, but as airfield disasters come in different scenarios and have the potential for catastrophe and regional variations exist, no single model is satisfactory for all.

The RNZAF, having few resources and having had to deal with some recent tragic aircraft mishaps, is revising its response to airfield emergencies to allow for optimising resources, quantifying emergencies and

improving the efficiency of the response.

An historical perspective is given, followed by a look at some models from other countries and organisations leading to the current response that has been developed by the RNZAF together with further proposed changes in a depressed economical environment.

AIRCREW FATIGUE IN DEPLOYED OPERATIONS. A LITERATURE REVIEW OF THE ISSUES AND CHALLENGES FACED IN MANAGING FATIGUE WHILE ENGAGED IN WAR-LIKE OPERATIONS

MICHAEL CLEMENTS

SQNLDR Michael Clements is currently posted to 1 Expeditionary Health Services Detachment Townsville as the Senior Medical Officer and the Officer in Charge of Townsville Health Centre. He joined the RAAF as a member of the Graduate Medical Scheme and has worked at RAAF Tindal, prior to posting to the United Kingdom for the Diploma in Aviation Medicine Kings College London. Deployments include Operation Resolute and Operation Slipper in 2009. He is currently engaged in training towards a Fellowship with the Australasian Faculty of Occupational and Environmental Medicine and is also a keen private pilot who spends as much of his spare time as possible flying in the tropical Whitsundays.

Research into aviation fatigue and fatigue countermeasures represent one of the most exciting and rapidly developing areas of human factors research in the aviation industry. There have been significant advances in understanding the physiology and science of fatigue and its' effects in the last 20 years and this is helping guide decision makers in making safer operational decisions. In an era when the endurance capability of large body aircraft keep increasing flight durations and where worldwide military conflict continues the demand for aircraft to operate in austere environments we need to clearly understand the various causes of increased fatigue in our aviators.

There is a wide body of literature and research into aviation fatigue factors such as cumulative crew duty hours, circadian rhythms, and time zone changes in civilian or non-warlike aviation operations. The scientific research normally relies on simulator studies with forced wakefulness to examine the detriment in performance noted during extended duty. Typically, the research assumes that when a pilot is relieved from duty their rest is wholesome and uniform in its nature. Unfortunately there is little research on the unique factors influencing fatigue in war-like operating environments despite the fact that higher fatigue levels may be experienced for the same flight durations and schedules.

This paper identifies some key contributors to increased fatigue levels in aviators operating in deployed and war-like environments. Operational pressures to stretch crew operations to their duty limits combine with inadequate quality of rest when not required for duty and can create higher rates of aviator fatigue. Quality of sleeping accommodation, noises of war-like operations at busy airfields, combat stress and deployment fatigue from enduring operations all have an impact on the quality of rest. Many papers, largely from the experience of United States military aviators show that simple things such as air conditioning and insulated accommodation

can play a large role in promoting restfulness.

Further research into aviator fatigue that is undertaken within deployed environments is required if we are to better assess aviator fatigue and risks in war-like operations. It may be that a separate risk analysis is undertaken for flights originating in war-like environments as compared to domestic operations and commanders need to know what risk they are taking every time they task a flight crew. There are some promising opportunities for risk analysis tools in deployed environments and they deserve consideration for targeted research into operational aviation fatigue.

Key Words: Aviation fatigue, crew duty limits, flight scheduling, flight safety

LONG-RUN MORTALITY EFFECTS OF VIETNAM-ERA ARMY SERVICE: EVIDENCE FROM AUSTRALIA'S CONSCRIPTION LOTTERIES

PETER SIMINSKI, SIMON VILLE

Peter Siminski is a Senior Lecturer in the School of Economics, University of Wollongong. His research is in applied microeconomics, with a focus on labour and health. He has a particular interest in evaluating the effects of government programs. He is the Chief Investigator of a project on the long run effects of military service on Vietnam-era servicemen. This project is funded by the Australian Research Council and the Department of Veterans' Affairs

We estimate the effect of Vietnam era Army service on mortality, exploiting Australia's conscription lotteries for identification. We utilise population data on deaths during 1994-2007 and military personnel records. The estimates are identified by over 51,000 compliers induced to enlist in the Army, including almost 16,000 who served in Vietnam. The implicit comparison group is the set of men who did not serve in the Army, but who would have served had their date of birth been selected in the ballot. We find no statistically significant effects on mortality overall, nor for any cause of death (by ICD-10 Chapter). Under reasonable assumptions on the death rate of compliers, the results can be expressed as relative risks (RR) of death during 1994-2007. The estimated overall RR associated with Army service is 1.03 (95% CI: 0.91, 1.21). On the assumption that Army service affected mortality only for those who served in Vietnam, the estimated RR for Vietnam Veterans is 1.06 (95% CI: 0.77, 1.66). We also find no evidence to support a hypothesis of offsetting effects due to domestic Army service (beneficial to longevity) and service in Vietnam (detrimental).

This paper is forthcoming in the American Economic Review, Volume 100, Issue 3. This research has been supported by the Department of Veterans' Affairs and the Australian Research Council through a Linkage Grant (LP100100417).

Key Words: Vietnam veterans, mortality, natural experiment, conscription

FOLLOW-UP STUDY OF PHYSICAL, PSYCHOLOGICAL, SOCIAL HEALTH AND WELLBEING IN AUSTRALIAN GULF WAR VETERANS

H KELSALL, J IKIN, A FORBES, D MCKENZIE, A MCFARLANE, M CREAMER, D CLARKE, K HORSLEY, M SIM

Dr Helen Kelsall is a public health physician and a Senior Research Fellow with the Monash Centre for Occupational and Environmental Health in the Department of Epidemiology and Preventive Medicine, Monash University. She was an Investigator on the baseline Australian Gulf War Veterans' Health Study and undertook her PhD on this study. Her research interests include veterans' health, public and occupational health, cancer epidemiology, chronic disease epidemiology, musculoskeletal disorders, and privacy and participation in research.

Background: During 2000-2003 Monash University and collaborators conducted a study of the health of Australian veterans of the 1991 Gulf War and an era-matched military comparison group. Data were

collected through a postal questionnaire, physical assessments, psychological interviews, laboratory testing of blood and storage of serum for future analyses.

Aim: Commencing in 2011, 20 years after the Gulf War, a follow-up study will assess longer term mortality and cancer rates, and longer-term sequelae of conditions found to be in excess in Gulf War veterans in the baseline study, in particular psychological conditions, multisymptom disorder and chronic fatigue, as well as relevant conditions identified through the scientific literature since the baseline study.

The main aims are to:

Investigate the persistence of, or recovery from, multisymptom disorder, psychological disorders, chronic fatigue, and other conditions ten years after the baseline study, and the factors which predict either persistence or recovery.

Determine whether patterns of health services and pharmaceutical utilisation have been greater for Gulf War veterans with these conditions at baseline and

Determine whether the presence of one or more of these conditions at baseline has led to poorer physical and psychological functioning, greater demoralisation, greater disability, poorer quality of life or social functioning.

Methods: All participants from the 2000-2003 baseline study (1456 Gulf War veterans, 1588 comparison group) will be invited to participate by completing a postal questionnaire and an over-the-phone psychological interview using the CIDI v2.1. The postal questionnaire will include some baseline study questions and some new measures; including questions on deployments, symptoms, medical conditions, irritable bowel syndrome, respiratory health, fatigue, quality of life, sleep, pain, psychological health including depression, PTSD, resilience and demoralisation, injury, risk taking, self-reported health services utilisation and medication use, reproductive history, alcohol and tobacco use, diet and exercise, waist/hip measurements, and social functioning.

Linkage with databases held by the Department of Veterans' Affairs will be undertaken to access medical services, allied health, nursing home, pharmaceutical and entitlements data and Medicare Australia to access Pharmaceutical Benefits Scheme, Repatriation Pharmaceutical Benefits Scheme and Medicare Benefits Schedule data.

All-cause mortality and cancer incidence rates will be determined by linking the cohort with the National Death Index and the Australian Cancer Database. Stored serum samples from the previous study will be analysed. One option is to investigate differences in paraoxonase, which is responsible for the metabolism of organophosphates in serum and is a determinant of their toxicity in humans.

Results: Data collection is planned to start in the second half of 2011. It is anticipated that the death and cancer linkage results may be available for presentation by the time of the conference.

Implications: This study will be the longest follow-up of the health of Gulf War veterans internationally and should contribute valuable knowledge to veteran, defence and civilian communities about the longer-term health and social impacts of

war-related and other military activities and experiences.

Key Words: Veterans' health, Gulf War, cohort study, psychological health, multisymptom disorder, chronic fatigue, physical health, social health and wellbeing

ALLOSTATIC LOAD: ANOTHER WAY OF UNDERSTANDING STRESS AND ITS CONSEQUENCES

RENEE ANDERSON, PETER NASVELD

Renee Anderson has a PhD in Clinical Psychology. She has a background in anxiety disordered populations. Renee has been with The University of Queensland for over 10 years and with the Centre for Military and Veterans Health since early 2011. At CMVH she has been involved in projects focusing on allostatic load, post traumatic stress disorder, and mild traumatic brain injuries.

Associate Professor Pete Nasveld is currently the Head of the University of Queensland Node of the Centre for Military and Veterans Health. He is involved in numerous research projects, including the Longitudinal Health Surveillance Program. Pete has extensive experience as a Defence Medical Officer, having served for 30 years in the Australian Regular Army as is a veteran of the Rwanda, Bougainville, and Timor-Leste deployments. Since 1996, he has been extensively involved in the conduct of clinical research, primarily in the areas of tropical health, in particular anti-malarial medications

Allostatic load (AL) refers to the cumulative effects of chronic and acute stress on the body. The observable outcomes of AL are evidenced as physiological, psychological, and psychosocial health outcomes, including post traumatic stress disorder (PTSD). Stress has long been recognised as a major contributing factor to poor health, yet common

explanations of stress fail to adequately account for its association with chronic illness. Our accepted understanding of the body's stress response is that it is adaptive because it promotes survival. Paradoxically however, this same response may be maladaptive if it is chronically or repeatedly activated over time. It is this maladaptive process that is central to the concept of AL. The key to understanding AL is an understanding of homeostasis. Homeostasis refers to a person's ability to return to physiological stability in parameters such as body temperature, pH, and heart rate following a stress (i.e., fight or flight) response. Allostasis is the extension of the concept of homeostasis and represents the adaptation process of the complex physiological system to physical, psychosocial, and environmental challenges or stress (McEwen, 2002). AL is the long-term result of failed adaptation or allostasis, which subsequently results in pathology and chronic illness. The long-term activation of the stress response, resulting in allostatic load or overload, can cause abnormalities in the brain and/or in other parts of the body. Therefore, the ultimate goal is to be able to prevent or decrease the negative impact of excessive stress on health (Fava et al., 2010). The increased operational tempo for the Australian Defence Force (ADF) means that stress-related issues will likely increase and the true costs of meeting the Department of Veterans' Affairs (DVA) obligations to the treatment and wellbeing of members are

not easily quantifiable or predictable. In addition to issues being raised contemporaneously, they are also likely to be made for decades to come. Previous trends show that for many Defence members and veterans, there is a time lag between experiencing stress and the presentation of problems associated with that stress. This is consistent with knowledge that stress exposure and the onset of disease are often not immediately temporally linked. Therefore, establishing a link between the two is often difficult for people and this is what the AL model endeavours to address. More research on AL in an Australian military context is recommended given the inherent situational stress entailed in being an ADF member. A better understanding of AL can improve ADF screening methods, inform preventative measures and targeted interventions, and assist in preventing longterm negative health outcomes for military personnel.

Key Words: Allostatic load, stress, health outcomes, military, veterans

KEY OPERATIONAL MENTAL HEALTH THEMES FROM THE MIDDLE EAST AREA OF OPERATIONS

KRISTI HEFFERNAN, ALISON KAINE, NICOLE SADLER

MAJ Kristi Heffernan is currently posted to 1st Psychology Unit. MAJ Heffernan joined the Australian Regular Army (ARA) in 2005 as a psychology officer, having been awarded a Master of Clinical Psychology degree in 2004. Since being in the ARA, she has worked in Townsville and Sydney in support of FORCOMD Bde units and a Special Forces unit. She has deployed in support of ADF personnel to East Timor (2006, 2007) and to the Middle East Area of Operations, including Iraq in 2007 and Afghanistan in 2007, 2008, 2009 and 2010. She has recently started a research PhD investigating the cognitive coping strategies of deployed personnel.

MAJ Alison Kaine is posted to the 1st Psychology Unit. MAJ Kaine joined the Australian Regular Army (ARA) in 2002 as a psychology officer and has performed in numerous roles in support of FORCOMD, Joint Health Command, Defence Intelligence and the Defence Science and Technology Organisation (DSTO). She has deployed in support of ADF personnel to Operations ASTUTE, CATALYST, SLIPPER, PAKISTAN ASSIST, and Operation RAMP. She was awarded a Master of Psychology (Forensic / Clinical) in 2001 and is currently working towards the completion of the PhD research investigating the defensive coping strategies of deployed personnel.

Along with other existing health assets within the middle-east area of operations (MEAO), mental health support is provided to ADF personnel through the constant rotation of embed psychology teams and force extraction teams. The inclusion of an additional psychologist into the embed psychology support team since late 2010, has enabled increased opportunities for service delivery throughout the MEAO, including preventative measures and enhancing resilience. This presentation will cover the key operational mental health themes from both the questionnaire data obtained through the Return to Australia Psychological Screens (RtAPS) and Special Screens, as well as through referrals on operations, command liaison and early

intervention activities. These screening tools and interventions not only assist with the mental health surveillance of the workforce, they also provide a mechanism for identifying groups who may be at high risk of exposure to stress or trauma. The ongoing work with groups identified as being “at risk”, including specific interventions to assist with mental well-being, will be discussed.

AN INTEGRATED ADF/EMST COURSE: A QUALITATIVE EVALUATION AND COMPARISON WITH SIMILAR PRE-DEPLOYMENT COURSES

BRUCE WAXMAN, ANDREW ELLIS

Associate Professor Bruce P Waxman is a squadron leader in the RAAF Specialist Reserve. His home unit is 21 squadron RAAF Williams at Laverton and his posting up until recently was 2EHS RAAF Williamstown. He has had deployments to Bougainville, East Timor, Bali II and with the Victorian Civilian Team to Banda Aceh. He has a passion for education and training and has been involved with the ADF/EMST Course as Director and Instructor almost since its inception and with Andrew Ellis developed the Integrated ADF/EMST Course.

He is the Director of the Academic Surgical Unit, Monash University, Dandenong Hospital involved with medical student teaching and research with a full time staff specialist position at Dandenong Hospital, Southern Health as Director of General Surgery and Colorectal Surgery and Director of Surgical Education and Training for the Dandenong and Casey Sector. He has a strong involvement with RACS as previous councillor and examiner and now focuses on Professional Development Courses for fellows with SAT SET and KTOT. He is Secretary of CSSANZ and on the Board of GSA. He is on the Board of the RFDS (Victorian Section) being the Chair of the Education and Research Committee and is a Group Leader with Scouts Australia.

Bruce is also an Executive Member of the Australasian Medical Writers Association with a strong interest in medical writing, having a regular column in the ANZ Journal of Surgery Medicine in Small Doses.

Background: The completion of an Early Management of Severe Trauma (EMST) Course has been mandatory for ADF Medical Officers since 2000. A military module was incorporated into the standard EMST Course for the ADF in 1990. A fully integrated course including military scenarios and doctrine was introduced in 2010(1)

The aim of this presentation is to present data on the evaluation of the integrated ADF/EMST Course and discuss potential alternatives.

Method: The fully integrated EMST Course was introduced at the ADF/EMST Course 44 and there have been three subsequent courses. The evaluation forms completed at end of each course were processed and a qualitative analysis was prepared. The role of ADF/EMST in the context of preparation for deployment of Medical Officers was analysed.

The content of similar military style medically based trauma courses for medical officers such as BATLS (UK), MTLS (Israel) and CCCC (USA) were analysed.

Results: The preliminary data indicates that the feedback has been very positive. More specific data will be presented. The Integrated ADF/EMST provides participants with an education experience in a learning environment that provides them with adequate preparation for deployment, equivalent to other courses overseas, however some modifications may be necessary.

Conclusion: The integrated ADF/EMST Course has received positive feedback

from the participants, and will remain dynamic in its content responding to the needs and feedback from participants and compares favourably with similar courses provided overseas.

Reference: Ellis A and Waxman B, The ADF/EMST Course: regrouping and moving forward, JMVH 2009; 17: 35

PHARMACOLOGY KNOWLEDGE AND TRAINING OF RAAF MEDICAL OFFICERS- IS AN INFUSION REQUIRED?

MICHAEL LUMSDEN-STEEL

SQNLDR Michael Lumsden-Steel, PAF medical Officer 2004-2009 with deployment experience including East Timor, MEAO, OP Bali Assist 2, and Papua New Guinea and currently RAAF SR medical officer, working as an advanced trainee (ATY1) in anaesthesia at the Launceston General Hospital, Tasmania.

Formal pharmacology training and assessment of pharmacology clinical competency of RAAF Medical Officers is currently very minimal. A Pharmacology Training Package is been developed for RAAF Medical Officers, which will specifically aim to develop a minimum level of clinical competence in the Thomas Pack Drugs. The results of a Pharmacology training Survey Monkey Study to be undertaken, and the proposed Pharmacology Training Package will be presented.

SHOCK TRAUMA PLATOON – WHAT CAPABILITY DOES IT PROVIDE AND WHAT ARE THE TRAINING REQUIREMENTS?

MIKE ROWSELL

CAPT Mark Rowsell is a Nursing Officer at 2 HSB, and is OIC Shock Trauma platoon (Des). Mark has 30 years military experience, UK & ADF. He has specialised in Burns, and has deployed on a number of occaisions to the Balkans and the Middle East. He was a BATLS instructor in the UK, teaching pre hospital trauma care for the current battlefields.

As a result of the Army's Combat Health Structures, and subsequent restructure, a new capability has been developed in the form of a specialist Shock Trauma Platoon (STP).

The STP is an Emergency Medicine consultant led team that is able to provide advanced resuscitation capability. As we review what is happening yesterday and today, we are able to identify what is required tomorrow in order to ensure that we meet the needs of our casualties. This capability is aimed at the polytraumatised patient who dictates the level of treatment that is required.

As we move forward in the 21st century we are seeing an increasing number of severely injured personnel that require what we now understand as Damage Control Resuscitation (DCR). In order to meet this demand, the STP will provide this initial DCR by having the ability to provide advanced airway support, including ventilation and administration of blood products. By combining two sections and adding a surgical supplement, STP will provide the Army with a Role 2 Light

Manoeuvre (R2LM) capability, enhancing the DCR effect with the inclusion of Damage Control Surgery (DCS). In the R2LM configuration it allows us to project the right clinical capability to meet the newly accepted 10-1-2 metric for the treatment of trauma.

For this specialist team to meet the challenges of the polytrauma patient, the skill sets required of the staff must be addressed. If we look at the current Nursing Officer (NO) component, we have Emergency Medicine (EM) and Intensive Care Unit (ICU) qualified NO's. To maximise the effect that these NO's provide, we should look at what is actually required from a competency base and facilitate our NOs to become 'trained' in Military Trauamatology, a speciality that is growing internationally in its own right.

What is a Military Trauma Nurse? These are NO's that have the essential competencies taken from EM, ICU and Peri Op nursing, resulting in the ability to provide an increased clinical effect in Resuscitation, provide critical care support outside of ICU, and surgical assistance and support where it is required. This surgical support can be in the Resus bay when an emergency thoracotomy is required through to DCS in the R2LM arena.

CMVH HEALTH EDUCATION OPPORTUNITIES

MERILYN WHITE

Wing Commander Merilyn White joined the Royal Australian Air Force in 1990 following training and consolidation as a Registered General Nurse in Adelaide, South Australia. Over the past 21 years she has served at numerous Air Force bases and Defence establishments in roles spanning clinical, instructional, supervisory, staff and sub-unit command. Merilyn has also assisted the Department of Veterans' Affairs care for frail veterans during a commemorative visit to Korea. She has served operationally in Rwanda.

Merilyn is currently posted as the Professional Development Manager at the Centre for Military and Veterans' Health

The Centre for Military and Veterans' Health (CMVH) is now well recognised as an internationally-unique academic, community and military partnership dedicated to maximising the health of Australian Defence Force (ADF) and veteran populations. CMVH strives for excellence in military and veterans' health research and education through collaboration between three leading universities and two Government Departments.

CMVH has developed a range of short and long-term courses designed to address the need for tertiary education for the ADF health services and the Department of Veterans' Affairs, including ADF personnel, contractors, public servants and civilians.

The Masters of Public Health (Defence) has been designed to align with ADF requirements and proposed career structures. Students are equipped with the academic, professional and management attributes that will enable them to approach Defence health issues from a population health prospective. With exit options, distance education and part-time studies, the MPH (Defence) program can adapt to

students' heavy workloads and pending deployments.

CMVH's range of specialised short courses is particularly beneficial to those who want to hone their medical, nursing and allied health skills in a world where Defence personnel are heavily involved in disaster management, global environmental health, and nuclear, biological and chemical defence.

This presentation will outline course aims, objectives, delivery methods and provide contact details for those interested in further study.

CMVH strives through first rate education, to enhance Defence health standards, improve learning and provide recognition of previous study.

Key Words: Health, Education, Military

AEROMEDICAL DISPOSITION OF AIRCREW MEDICAL EMPLOYMENT CLASSIFICATION REVIEWS, 2000-2009

ADRIAN SMITH, VISHNU JAGANATHAN, JOANNE MARSHALL, JESSICA GEHLERT

Dr Adrian Smith is an aviation medicine specialist contracted to support Army Aviation operations through the RAAF Institute of Aviation Medicine. He completed his Diploma in Aviation Medicine (UK) in 2001, Masters of Aerospace Medicine with Honours in 2006, and is currently completing his doctoral thesis. He is a Member of the International Academy of Aviation and Space Medicine, and a Fellow of the Royal Aeronautical Society

Purpose: The RAAF Institute of Aviation Medicine is responsible for the aeromedical disposition of all ADF aircrew, performing 519 Aircrew Medical Employment Classification Reviews (AMECRs) during the 10-year period 2000 to 2009. The casemix and outcomes of ADF aircrew undergoing medical board have not been explored to date. This paper describes the first structured review of the casemix passing through AVMED for medical board review, in an effort to inform the aircrew-health training AVMED provides and to help shape preventative health measures relevant to the preservation of the ADF's aviation capability.

Method: The database of Central and Institute AMECRs was reviewed. First-listed clinical information was grouped into diagnostic categories, and described in terms of the casemix for the aircrew presenting for review, as well as those who were 'grounded' permanently. The data was further evaluated in terms of pilot and non-pilot aircrew.

Results: During the period January 2000 to December 2009, AVMED reviewed 519 AMECRs, comprising 435 individuals. The majority were pilots (44%), followed by Air Combat Officers (4%) and Loadmasters (12%), and Navigators (7%). The five conditions most commonly listed first as the reason for requiring AMECR were: back pain (9%), mood disorder (8.5%), migraine (4.5%), PTSD (3.5%), and neck pain (3%). Of the first-listed conditions, musculoskeletal injuries accounted for 23% and mental health issues accounted for 17% as reasons for AMECR. The five conditions most commonly listed first as the reason for permanent disqualification from flying were: back pain (12%), mood disorders (6%), migraine (5%), knee pain (4%), and leg pain (4%). Pilots accounted for only 44% of all AMECRs, but accounted for 70% of neck pain, and 60% of knee injuries. Conversely, loadmasters accounted for only 13% of all AMECRs, but 30% of all back pain cases, 20% of mood disorders, and 20% of shoulder injuries. When compared to pilots, loadmasters appear to be 2.5 times more likely to have AMECR because of back pain, and 3 times more likely to have AMECR because of a mood disorder. Overall, 60% of pilots and loadmasters were permanently grounded because of medical and surgical conditions, and 20% for back pain. Mental health accounted for 15% of loadmasters but only 5% of pilots who were permanently grounded, and musculoskeletal injuries (excluding back and neck) accounted for 30% of permanently-grounded pilots but no loadmasters.

Conclusions: This research suggests that musculoskeletal injuries and mental health disorders are the two most common

reasons to bring aircrew to MECR, and are also the most common reasons for permanent grounding. The research also suggests that different aircrew roles may have a different injury/illness pattern, and this may inform future research or health education initiatives.

Key Words: MECR, Medical Employment Classification Review, grounding, aircrew

A MILITARY TRANSPORT PILOT WITH POORLY-CONTROLLED EPILEPSY – HOW THE 1% RULE COULD ALLOW THEM TO KEEP FLYING

BRENT BARKER, SMITH A

SQNLDR Barker is currently Commanding Officer, RAAF Institute of Aviation Medicine, RAAF Edinburgh, South Australia. He has a background in pharmacy, epidemiology, general practice and completed the Diploma of Aviation Medicine in the UK in 2009.

The 1% Rule is widely used in aviation medicine as a tool to determine a pilot's fitness to fly – an incapacitation rate of more than 1% is generally considered incompatible with flight safety. However, the 1% Rule is predicated on a number of assumptions. Given its origin in the commercial aviation domain, it is important to evaluate whether the 1% Rule provides relevant guidance for the management of military aircrew. This presentation will explore the assumptions that underpin the 1% Rule, and challenge our understanding that poorly controlled epilepsy is "unsafe" for a military pilot.

Key Words: 1% rule, flight safety, incapacitation

US AIR FORCE SCHOOL OF AEROSPACE MEDICINE AND THE AEROMEDICAL CONSULTATION SERVICE

DR. DANIEL VAN SYOC

Dr. Daniel Van Syoc is a graduate of the University of Iowa College of Medicine and retired from the US Air Force in 2008 after serving for 25 years. He is board certified in Aerospace Medicine and Occupational Medicine and was previously certified in Family Practice. His major area of expertise is medical standards. He is currently deputy chief of the Aeromedical Consultation Service at Wright-Patterson AFB, Ohio.

In 2005 the US Department of Defense Base Re-alignment and Closure (BRAC) committee made the decision to close Brooks AFB in San Antonio, TX. Brooks had been the home of the US Air Force School of Aerospace Medicine (USAFSAM) since 1959. The closure led to a move of all USAFSAM functions to Wright-Patterson AFB in Dayton, OH earlier this year. Dr. Van Syoc's presentation will focus on the missions of USAFSAM with particular emphasis on the Aeromedical Consultation Service (ACS). He is currently the deputy chief of the ACS and was previously the chief when he was on active duty with the Air Force.

ESSENTIAL MILITARY MUSCULOSKELETAL MEDICINE- A ONE DAY MODULE

TONY DELANEY

COL Tony Delaney is a Sports and Exercise Physicianat Narrabeen Sports Medicine Centre and visiting Senior Specialist to FBEHC and 1 HSB. He is Chair, ADF Musculoskeletal, Sports and Rehab CG. His interests include overuse injuries of the spine , upper/ lower limbs, physiology and injury in hot , cold, high altitude and underwater environments.

Most uniformed and civilian medical medical practitioners are trained in a hospital or general practice environment. They are not well equipped to diagnose and manage the spectrum of acute and chronic musculoskeletal injuries seen in the ADF. Musculosleletal injuries account for approximately 50 % of medical consultations and 60 % of medical discharges from th ADF. The human and financial cost is enormous. An unquantified number of of ADF personel seek self-funded external health treatment. The author has developed a series of lectures on evidence based management of common spinal, upper, lower limb and environmental injuries for the Army Medical Officers Introductory Course. The course is suitable for uniformed and civilian MOs and physiotherapists. Each student receives a CD of the presentations. Improved understanding of these conditions will lead to more rapidappropriate diagnosis and management, with significant savings in personnel resources, time and money. It is proposed that the One Day Module be presented to uniformed and contracted MOs. and physiotherapists across JHC.

CHRONIC PAIN AND PAIN COMPLEX – ILLUSTRATIVE CASES

STEPHEN RUDZKI

Brigadier Rudzki joined the Army Reserve in 1975 after completing high school. He become an officer cadet in Adelaide University Regiment in 1977 while completing his medical studies, and graduated as a 2nd Lieutenant in the Royal Australian Army Infantry Corps in 1980. He joined the undergraduate scheme in his final year of medicine and on receiving his medical degree from Adelaide University in 1982 he transferred to the Royal Australian Army Medical Corps.

Brigadier Rudzki has served in a variety of junior Medical Officer postings, including the 2nd Military Hospital , Regimental Medical Officer in the 3rd Battalion (Para), 8/12 Medium Regiment (Artillery) and the 1st Recruit Training Battalion. Brigadier Rudzki took a year of leave without pay in 1986 to work with the British Army as a Senior House Officer in Rheumatology and Rehabilitation at the Queen Elizabeth Military Hospital in Woolwich.

Command and staff appointments have included SO2 Medical at Headquarters Second Military District

(1988-89), Officer Commanding Medical Company and Medical Support Company 1st Field Hospital (1989 -1991), Officer Commanding Albury-Wodonga Medical Centre (1994-95) and Commanding Officer of Canberra Area Medical Unit (1997-1999). Brigadier Rudzki served as an exchange with the United States Army at the US Army Medical Department Centre and School in San Antonio Texas (2000-01). While there he worked in the areas of Telemedicine and electronic health records.

Higher education achievements include a Graduate Diploma in Sport Science (Cumberland College 1986), Master of Public Health (Sydney University 1997), and Doctor of Philosophy (Australian national University 2009). Brigadier Rudzki has had a long standing interest in reducing injury in military recruits, and has published a number of research papers on the subject. He was awarded a Defence Force Fellowship in 1993 to document and compare Injuries in the Australian Army with Allied Forces. He was also responsible for the introduction of the Defence Injury Prevention Program in 2003, and his PhD thesis was titled "The Cost of Injury to the Australian Army". He was awarded a foundation Fellowship of the Australasian College of Sports Physicians in 1991.

Senior staff appointments have included Director of Preventative Health, Defence Health Services Division (2003-2005), Director of Occupational Health and Safety - Army (2005-2008) and inaugural Director of Army Health (2008-09). As the inaugural Director of Occupational Health and Safety, Brigadier Rudzki was responsible for the introduction and implementation of Army's Safety Management System and oversaw the introduction of Army's Risk Appreciation process.

Operational postings have included Indonesia (2 Field Survey Squadron, May-Aug 1983), Western Sahara (MINURSO April-Nov 1992), Bougainville (Officer Commanding Combined Health Element Oct-Dec 1999), East Timor (Chief Medical Officer for the United Nations UNTAET, July 2002 - Jan 2003) and the Middle East (J07 HQJTF633 July-Nov 2009).

Brigadier Rudzki received a Commander Logistics Command Commendation in 1994 and was awarded membership of the Order of Australia in 2005. He is currently Director General Strategic Health Coordination in Joint Health Command.

Case 1. 47 year old member with a 7 year history of intermittent Left sided LBP following a lifting injury. Presented with sacral parasthesiae and tenesmus. Urgent MRI showed a central disc prolapse compromising the exit foramina. He responded to treatment and his disc related symptoms resolved. He continued to have Left sided pain of 4/10 that had increasingly troubled him over the last 12 months. Examination revealed tenderness over the Left PSIS at the insertion the Thoraco-lumbar fascia and the erector spinae musculature. A provisional diagnosis of enthesiopathy was made and an injection of HC/LA was administered. On review, the pain score had reduced to 1/10 and the patient reviewed to physiotherapy. At subsequent review the patient was pain free with no restriction in ADL. Key message: In military patients multiple pathologies can co-exist and regular review of examination findings is required to ascertain pain generation sites.

Case 2. A young artillery soldier injured his back carrying heavy rounds. His pain was localised initially but had subsequently become more diffuse. Efforts to address areas of local tenderness through local injection of HC/LA produced little effect. The member displayed clinical signs of depression and was commenced on anti-depressants. Because of his persisting pain in the absence of local pain generators, a diagnosis of chronic pain was made. The patient was admitted to hospital

and commenced on a ketamine infusion titrated to pain relief for three days, in accordance with a previously described protocol. On discharge the patient was pain free. He subsequently commenced on a re-conditioning program and is now able to lift weights of 100 kg without any ill – effect. He remains pain free with no physical restrictions The use of ketamine infusion in the management of chronic pain has been previously described and this case supports further study of this treatment in a randomised control trial.

ENHANCING AND ENRICHING THE ADF REHABILITATION PROGRAM

JIM PORTEOUS

Jim is the Director of the Australian Defence Force Rehabilitation and Compensation section of the Joint Health Command. He is responsible for the provision of strategic direction and governance of the systems, policies and procedures for military rehabilitation, compensation and paralympic sports, and liaison with internal and external stakeholders.

Jim has 27 years experience leading teams in the development, implementation and evaluation of people strategies, policies and initiatives across Defence. This includes strategic planning, project management, policy development, education and training, and industrial and employee relations.

He has represented Defence at Inter Departmental Committees (IDC), working groups and international conferences. In 2002, he represented Defence and delivered a paper at an International Convention in London.

Jim has initiated, developed and managed partnerships with external organisations, such as the Australian Graduate School of Management.

The achievements of Jim's team and of Defence have been recognised by the Ministers and the Government, and other Commonwealth Agencies. He received an Australia Day 2005 Medallion for his professionalism, leadership and significant contribution to the successful development and implementation of a number of innovative strategies.

The Australian Defence Force Rehabilitation Program (ADFRP) has been founded on best practice principles of occupational rehabilitation. The Program applies best practice principles such as the early involvement of allied health professionals in the development of occupational rehabilitation programs and the monitoring of return to work outcomes. These skilled professionals provide an initial assessment including psychosocial factors that may influence rehabilitation program.

In civilian agencies the early injury identification process mainly relies on a compensation-based system. In that system occupational rehabilitation is focussed on returning the employee to work as quickly and efficiently as possible in order to reduce their workers compensation costs.

In the military environment the driver is the deployment capability factor that is supported by the ADF's organic health care model. The ADF provides health care and rehabilitation for service-related and non-service related conditions in order to maximise military capability. The Program works with the Department of Veterans'

Affairs to reduce the impact of injury or illness on military personnel.

There has been feedback received from ADF members, command and health staff that informs the need to improve and extend occupational and clinical rehabilitation services.

This presentation will explain how and why, as we speak, the ADF is enhancing and enriching its garrison health and rehabilitation services across Australia. It will discuss the implementation of a new service delivery model based on a predominately internal workforce. And, it will explain the value of these changes to military personnel, command and Joint Health Command.

Finally, the presentation will touch upon the planned improvements to recovery and rehabilitation services through the Support for Wounded, Injured and Ill Program, and the government's Simpson Assistance Program.

COL Tony Delaney, CMDR Ross Mills and Mr Mike Armitage will provided related abstracts on rehabilitation.

VOCATIONAL REHABILITATION

ROSS MILLS

Ross Mills is an Occupational Physician, and past president of AFOEM. He also holds fellowships in General Practice and Disability Medicine.

Prior to joining the Navy in 2009, Ross has worked extensively in clinical practice including in bulk billing medical centres, as a Staff Specialist in an Area Health Service, in vocational rehabilitation, and in medico-legal medicine.

His professional interests include Ergonomics, Health Informatics, Aviation and Hyperbaric Medicine. Unprofessional interests include his family, fitness, music and war gamming

Returning an injured worker to an appropriate job is a Therapeutic Intervention! There are multiple well documented adverse health outcomes associated with a prolonged absence from work; including increased morbidity, increased mortality and an increased utilisation of health care resources. Many of these adverse outcomes are reversed on unemployed adults re-entering employment.

We need to reverse the belief that we have to be totally fit and well to work, or that recovery from illness or injury must be complete before return to work. Restoration of working life is closely allied to clinical goals. The longer a person remains unemployed, the lower the likelihood of achieving a successful return to work (RTW) outcome.

There are multiple barriers to RTW which need to be overcome; including medical, psychosocial and industrial. The treating doctor, working alongside a multidisciplinary team, has a pivotal role in managing RTW barriers and outcomes. Some of these RTW barriers include:

- Inappropriate / incomplete medical management,
- An inappropriate vocational goal,
- Conflict between the patient and their employer / supervisor,
- Job dissatisfaction,
- Psychological complications,

- Fear of pain or re-injury, and
- A lack of clear medical guidelines or conflicting advice.

As doctors we need to understand the difference between medically necessary disability and medically unnecessary disability. Using a flag system (Yellow – the person, Blue – the workplace, and Black – the context) can sometimes be helpful in remembering and managing the relevant issues.

Specific things you as the treating doctor can do to improve RTW outcomes include:

- Manage both the medical and work-related aspects of rehabilitation,
- Provide specific medical and work capacity guidelines,
- Refer to specialists when appropriate,
- Assess and manage the common psychosocial barriers,
- Communicate with the employer as needed, and
- Explain the negative consequences of delayed treatment / RTW.

As the Treating Doctor, if you are commenting on workplace causality, understand the relevant occupational epidemiology.

Remember that the doctor advises on work capacity, the employer makes a job available, and the rehabilitation team facilitates the return to work.

Further information can be obtained from the following AFOEM publications:

Realising the Health Benefits of Work – A Position Statement: AFOEM April 2010

Helping People Return to Work Using evidence for better outcomes – A Position Statement: AFOEM 2009

Key Words: Return to Work, Therapeutic Intervention, Vocational Rehabilitation.

PHYSICIAN ASSISTANT'S WITHIN THE ADF

JASON BROWN

As a serving Advanced Medical Technician within the Royal Australian Army Medical Corps (RAAMC) it has been difficult to further enhance and develop my clinical and theoretical knowledge. The pinnacle of our trade is currently the Advanced Medical Technician Course. Upon completion of this course there are restricted formally recognised Military courses to complete for further career development.

An ideal answer to counteract this issue within Defence would be that of a Physician Assistant (P.A). After formal training, there is scope for a P.A to be posted alongside each Military Doctor in order to be utilised under their discretion and delegated authority. This would allow Medical Officer's to undertake the clinical cases of a more complex and time consuming nature whilst at the same time provide an opportunity for the skills and knowledge of Military Medical Technicians (P.A's) to be fully utilised.

P.A's are a force multiplier that can work as an adjunct to help the Military Force ensure that it maintains a healthy and deployable workforce. Some positive attributes that a P.A can bring to a Military Medical facility include:

- Enhanced Primary Health care training;
- Enhanced physical examination and history taking techniques;
- Diagnostic test ordering and evaluation;
- Mentoring of junior staff;
- Prescribing rights;
- Developed knowledge of paediatric and geriatric issue, particularly with reference to deployments.

After much research, I chose to undertake the Master's of Physician Assistant Studies (Mast P.A) to enhance my own skills and knowledge as well as further my personal career development. The Mast. P.A studies has the potential to allow Soldiers to develop and further enhance their skills as a clinician as well as extend upon the knowledge that they have already gained from the Advanced Medical Technician level. With these enhanced skills and knowledge, the PA is able to work at a level of independence in a variety of clinical settings and provide opportunities for new clinical experiences that may not be experienced as an AAMT.

As the Defence Force moves toward the future and requires more advanced capabilities, Australian soldiers are too moving forward towards Tertiary institutions to gain further education to build upon their initial training received at respective training institutions. Within Defence it would be advantageous to determine at the Senior Corporal to Junior Sergeant Level who would be suitable for this level of study. Through having suitable criteria and a formally recognised tertiary course, this will provide an opportunity for Soldiers to gain a tertiary qualification, enhance upon current skills and knowledge, and provide support in Medical Facilities in country as well as on deployments. With an opportunity to study and further ones career, it may also inspire Soldiers to remain within the ADF as well as an opportunity for the ADF to retain its skilled Medical staff.

THE EFFECT OF A PERIOD 4 WEEK TREATMENT EXERCISE PROTOCOL ON LOW BACK PAIN IN MILITARY FORCES.

ESMAEIL ALIBAKHSHI (IRAN),
VAHID SOBHANI, NEDA BAYAT

Introduction: Low back pain (LBP) remains a significant health care issue with reportedly over 50% prevalence in the general population and over 60% Militaries likely to experience at least one episode of LBP during in their lifetime. In this study aim the effect of a period 4 week Treatment Exercise Protocol (TEP) on Low back pain in Military Forces.

Methods: For this respect, 30 Military Force with average age of 27.56±1.77 years and average history of LBP 7.21±2.33 month and Military history of 7.84±2.11 years were related with of professional physician with MRI diagnose respected. Then, the cases were divided into two groups of 15 individuals of physiotherapy (Control group) and Treatment Exercise Protocol (Experimental group). Investigated dependent variables include ROM of hip joint in Flexion and Extension, by universal goniometry and for measurement Strength of hip muscles by EMG test in pretest and postest. For assessment of the gathered information, descriptive statistic, independent and paired t-test was used (P<0/05).

Findings: The research findings were based on the fact that the TEP was more effective compared to the individual physiotherapy on LBP in Military Forces. But, solely a significant difference was recognized in Extension movement of TEP (t=10/365, P<0.021) and Physiotherapy (t = 9/221, P<0.025). Reaction time in EMG improved in Gluteus and Quadriceps Muscles in Military Forces of TEP (P<0.012).

Discussion: According to the investigation finding, it can be concluded that the Treatment Exercise Protocol, have more influence on improved ROM and Reaction force of Hip muscles special of Quadriceps muscles in compared to single Physiotherapy.

Key words: Low back pain, Treatment Exercise Protocol, Physiotherapy.

17 COMBAT SERVICE SUPPORT BRIGADE - HOME TO THE NEW DEPLOYABLE ARMY HEALTH SYSTEM

CLARK FLINT

LTCOL Clark Flint is a lateral recruit from the British Army, joining the Australian Army in 2006. He has a combined service of 27 years within the Army and is currently serving as the Senior Health Officer at HQ 17 Combat Service Support Brigade. He is a General Support Officer who has served on operations in Cyprus, Bosnia, Iraq and Afghanistan and has served with 1 Health Support Battalion, HQ Forces Command and attended Staff College in Canberra. He is married to Helen and has two grown up children.

His current job sees him being part of the Army Health Restructure, which has nearly all of the Deployable Army Health moving under Command of 17 CSS Bde, and it is on this subject that he will be presenting on today.

Background: Army deployable health is due to undergo significant change as it restructures to meet the new challenges within the operational environment. Much of the focus will be on brigading all of the deployable Army health assets under the

command of 17 Combat Service Support Brigade.

Continuum of health care
This restructure will affect the full continuum of health care from point of wounding through to strategic evacuation to Australia and will be commonly known as the Joint Based Trauma System covering the following metrics:

- control major haemorrhage and a secure airway within 10 minutes of injury:
- evacuation from the point of injury within 1 hour by personnel capable of providing en-route advanced resuscitative care; and
- surgery at hospital level care to commence not later than 2 hours following injury.

Meeting these times may not be possible in all operational situations nonetheless, it is the guiding principle for developing operational health support structures.

The future army health structures
The Army health restructure sees the amalgamation of all of the deployable health capabilities forming under four distinct health battalions.

1 Close Health Battalion (CHB)

1 CHSB will provide integral and close combat health support to Forces Command force elements in land operations. The rebalancing of close health assets provides the required number of mission capable, robust organisations that will deliver well planned, coordinated health care effects to dependent battle group and enabling land force elements. The structure postures Army to provide combat health support while maintaining a supporting focus on the raise, train and sustain activities and garrison health support responsibilities.

2 General Health Battalion (2 GHB)

2 GHB can task-organise elements to provide a non-surgical Role 2 (extended primary-healthcare and resuscitation). The Battalion can provide the framework for an ADF or coalition Role 3 hospital capability. This will require significant Joint and/or combined augmentation. The role of the 2 GHB is to provide combat health support up to Role 2 (Enhanced) in support of land based elements during joint, combined or interagency operations.

3 Health Support Battalion (3 HSB)

The management of Army Reserve health professionals for the provision of Role 2 and above health support will be centrally managed by the 3 HSB in order to provide a sustainable surgical capability within Army. The restructure capitalises on the strength of health reservists; leveraging of the fact that they join the Army fully trained in their clinical discipline and only requires a moderate amount of military training to make them deployable as individuals. This is considered the most effective and efficient method of managing the specialist health reservist to enhance combat health support within the limits of the current workforce.

1 Psych Unit

1 Psych Unit will force generate task-organised Psychology Support Teams to provide operational mental health support to force elements in combat, peace and humanitarian relief operations.

Summary: Due to the changing requirements for the ADF and to refresh the current Army health structures, a health restructure will commence in 2012 resulting

in all of the deployable Army health moving into a single chain of command – 17 Combat Service Support Brigade.

A COMPARATIVE TWO PROGRAMS OF MASSAGE THERAPY AND PHYSICAL THERAPY ON TREATMENT OF CHRONIC KNEE PAIN ARMY FORCES AND PRESENT A TREATMENT PROTOCOL

ESMAEIL ALIBAKHSHI, NEDA BAYAT

Esmaeil Alibakhshi is a Researcher of Exercise Physiology at the Research Center, Baqiyatallah University of Medical Science. He was a member of excellent student of Ministry of Science and Technology of Iran and member of best researcher in Ministry of Health Science. His interests include Exercise Rehabilitation.

Introduction: A Comparative of two programs of Massage therapy and Physical therapy on treated of chronic knee pain Army forces and present an effective treatment protocol.

Methods: 45 army forces who suffer from chronic knee pain in 3 programs of massage therapy, physical therapy and Compound with average ages of 35/27±2/13 year were selected. For evaluation the injury used of, MRI, Special Clinical Tests, Rang of Motion (ROM) of Knee and EMG test. Statistics methods, Descriptive statistics and T- student in the level of ($P<0.01$).

Findings: Special Clinical Test and MRI in 3 programs were significant ($P<0.0025$). In ROM the Compound program with ($T=16/336$, $P<0.0214$) in extension movement and Reaction time ($RT=222.3\pm12.6$) of physical therapy was more significant ($P<0.00251$).

Discussion: Comparison of 2 program about to Physical Therapy and Massage Therapy significant effective on treated chronic knee pain of army forces ($P<0.0001$). But Compound treatment results best than physical therapy and massage therapy on chronic knee pain.

Key words: Physical therapy, Massage therapy, chronic knee pain, Army forces.

CRITICAL INCIDENT MENTAL HEALTH SUPPORT RESPONSES ON ADF OPERATIONS: KEY CHALLENGES AND LESSONS LEARNT

LTCOL NICOLE SADLER, MAJ KRISTI HEFFERNAN

LTCOL Nicole Sadler is currently the Commanding Officer of 1st Psychology Unit. LTCOL Sadler joined the Regular Army in 1994 as a psychology officer and throughout her career has worked in recruitment, assessment, counselling, training and policy development. She has deployed in support of ADF personnel to Operation BEL ISI, Operation SUMATRA ASSIST, Operation CATALYST, Operation ASTUTE and Operation SLIPPER. She completed the Australian Command and Staff Course in 2004 and was awarded a Master of Psychology (Clinical) degree in 2005.

MAJ Kristi Heffernan is currently posted to 1st Psychology Unit. MAJ Heffernan joined the Australian Regular Army (ARA) in 2005 as a psychology officer, having been awarded a Master of Clinical Psychology degree in 2004. Since being in the ARA, she has worked in Townsville and Sydney in support of FORCOMD Bde units and a Special Forces unit. She has deployed in support of ADF personnel to East Timor (2006, 2007) and to the Middle East Area of Operations, including Iraq in 2007 and Afghanistan in 2007, 2008, 2009 and 2010. She has recently started a research PhD investigating the cognitive coping strategies of deployed personnel.

In 2002, a comprehensive framework to respond to Critical Incidents or potentially traumatising events was introduced within the Australian Defence Force (ADF). This framework is a flexible occupational approach that enhances resilience and recovery. The ADF has used this framework to guide our response to a range of events, including to support ADF personnel deployed on operations. This presentation will review how this model has been used on operations, summarise the key lessons learnt, and discuss the challenges and flexibility required when applying the model to incidents which occur in a high threat environment. Finally, the role of Commanders and mental health and health professionals in the implementation of the model will be discussed.

CAUTIONARY TALES FROM THE SPORTS MEDICINE CLINICS

TONY DELANEY

COL Tony Delaney is a Sports and Exercise Physicianat Narrabeen Sports Medicine Centre and visiting Senior Specialist to FBEHC and 1 HSB. He is Chair, ADF Musculoskeletal, Sports and Rehab CG. His interests include overuse injuries of the spine, upper/ lower limbs, physiology and injury in hot, cold, high altitude and underwater environments.

Biomechanics and Physiology

Case 1 Exertional leg pain. Air Force Officer with gradual onset left lower leg pain, over a year. Initial Dx " shin splints" Bone scan, CT – true stress fracture distal tibia

Treatment NWB, crutches, cam walker 6 + months with no little improvement. Bone densities reduced 25-30% with NWB.

Assessed with COL Andrew Ellis, orthopaedic surgeon, and a bone endocrinologist .

Bisphosphonate infusion, Steady recovery. Most stress fractures recover uneventfully with relative rest, appropriate orthotics, stopping running, switching to cycling, rowing, swimming and deep water running. There is a subgroup that do not progress well. Recalcitrant “shins splints” often coexist with exertional compartment syndrome and the bone stress continuum.

Cases 2+. Meniscectomy. A 33 yo male Army member presented with a history of previous atraumatic medial meniscal tear and meniscectomy. He experienced increasing medial knee pain with and after weight bearing. Examination revealed significant genu varum, medial joint line tenderness, positive MacMurrays for medial compartment pathology. MRI confirmed medial meniscal tear and medial femoral osteochondral defect. Initial management should include relative rest, appropriate orthotics with a valgus wedge to unload the medial compartment, stopping running , switching to cycling, rowing, swimming and deep water running. These cases are not suited for infantry, and should transfer to more sedentary trades. I have seen one case who passed through the recruiting process with a letter from the operating surgeon stating that he was cured with meniscectomy and fit for Defence service, despite PXR evidence of a medial femoral osteochondral defect before enlistment.

Growths Case 1 A 24 yo female Navy member presented with 6 months painless swelling of the right knee. MRI revealed multiloculated pigmented villonodular synovitis. (PVNS). Unifocal lesions response well to local synovectomy, but multifocal lesion may require additional low dose radiotherapy to reduce risk of recurrence.

Case 2 An 18 y.o. soldier presented with ongoing left hip pain on running and pack marching, through Kapooka and IET training. A good clinical history was difficult to extract but on further questioning he admitted to limping at the 1 Km mark of a 2.4 run. Examination of the lower back, pelvis and hip, including ROM, grind, FABER, adductor, conjoint tendons, hernial orifices were unremarkable. Plain XR left hip that day at 1 HSB revealed a multiloculated (ABC) occupying most of the femoral head and neck, not far short of fracturing.. Further questioning extracted a history of being taken by mother to GPs, physios, chiros at age 14-15 with recurrent hip pain. No PXR.

He was had the tumour resected and grafted.

Aneurysmal Bone Cysts make up approximately 1 l% of bone tumours. Literature review reports a 70-90 % cure rate with local resection. Revision surgery may be required. 10% may be more locally aggressive or recurrent, of which 90 % resolve with low dose radiotherapy (24-36Gy.

Case 3 A 23 year old female presented with exertional hip pain, but aching at night. NSAIDS reduced the pain .

MRI and CT pelvic revealed a lytic lesion of the right ilium. DD osteoblastoma or osteoid osteoma. Excision biopsy confirmed a benign eosinophilc granuloma.

Case 4 There is recent report of a leiomyosarcoma arising in a case of long

standing discogenic and facet related low back pain.

Defence members often have radiology files of staggering size. Repeated PXR and CT spine and pelvis in young members can increase contribute to long term risk of tumour. Radiation risk needs to be balanced against the need for accurate diagnosis and treatment.

Some members may additionally self fund external chiropractors, with a risk of annual 3 level spinal PXR. The ADF Radiology Consultative Group may be able to provide input on guidelines.

THE "RAPID LEARNING HEALTHCARE" SYSTEM: USING PRACTICE-BASED DATA TO DRIVE CONTINUOUS QUALITY IMPROVEMENTS IN REHABILITATION SERVICE DELIVERY

JOHN SHEPHARD, COL TONY DELANEY

Dr Shephard is a GP with over 20 years clinical experience spanning a wide range of settings including humanitarian aid, remote aboriginal health and inner city marginalised populations. He has post graduate qualifications in General Practice, Tropical Medicine and Public Health. He has worked as a civilian health practitioner to ADF since 2006, including 4.5 years at 3rd Battalion Royal Aust Regiment, and has been awarded a Commendation from Commander 1 Div in recognition of this work

Background: Healthcare delivery in the ADF faces ever increasing demands in the area of quality and efficiency. However, evidence-based medicine (EBM) struggles to inform the diversity of daily clinical practice. The complexity of the environment and the speed of innovation further muddy the water. The "Rapid Learning Healthcare" system is an increasingly popular, data driven, approach which aims to embed knowledge generation into the core of clinical practice and narrow the research-practice divide.

Aim: Using clinical rehabilitation data collected at the practice level over a 12 month period, this paper will examine how a "Rapid Learning Healthcare" approach can help to inform quality improvement initiatives.

Setting: The 3RAR RAP looks after a high tempo dependency with ongoing short notice commitments, and maintenance of conventional parachute capability. Force preservation demands effective and efficient rehabilitation of members injured in training or on deployment.

Actions: A simple excel spreadsheet was developed to collect rehabilitation related data tracking inputs and outcomes including the following:

1. Injury rates
2. Nature, site, causation of injury
3. Outcome
4. Total days lost

These data sets were continuously monitored and discussed amongst the multi-disciplinary team. Specialist opinion was actively sort.

Discussion: This "Rapid Learning Healthcare" approach delivered considerable insights, including important differentiations between injury types and rehabilitation goals. These were subsequently used to refine clinical practice and associated administration.

The advent of an EHR within the ADF offers an excellent opportunity to drive data driven, practice centric quality initiatives.

Key Words : Evidence based medicine, Rapid learning healthcare, CQI, Rehabilitation

INFRARED INTERROGATION OF OSSEOUS STRESS PATHOPHYSIOLOGY IN AUSTRALIAN ARMY RECRUITS: A THREE MONTH CLINICAL CASE STUDY

DANIEL TJ ARTHUR, MASOOD M KHAN

Daniel is a PhD student in Mechanical Engineering at Curtin University, Perth, WA addressing medical applications of thermal infrared imaging. He conducted a 3 month clinical study into application of TIRI to detection / staging of osseous stress pathophysiology at Kapooka Health centre under ADHREC protocol 592-10. He is Currently working on powerful medical image processing techniques at the iVEC supercomputing facility in Perth, WA. Specifically addressing optical flow in longitudinal TIRI data, and registration of 2D TIRI data to 3D MRI models. MRI acquisition supported by Fremantle Hospital Radiology, TIRI acquisition supported by FLIR Systems Australia. He is supervised by Dr Masood Mehmood Khan

The current CMVH research initiative 'Deployment Health Surveillance' reflects the need for innovative health monitoring technologies applicable to ADF personnel deployed to areas such as Bougainville, East Timor, the Solomon Islands and the Middle East. This paper details a three month clinical study conducted under ADHREC protocol #592-10 into the feasibility of the diagnosis and management of osseous stress pathology in the lower limbs of three platoons of Australian Regular Army basic trainees via thermal infrared imaging (TIRI). A dataset of over 500 TIRI, MRI, and nuclear scintigraphic images was amassed, with the feasibility of thermographic tissue discrimination is demonstrated in physioanatomic context. Cadaveric dissection and correlation with volumetric MRI and nuclear scintigraphic data are used to validate 'normal' topographic TIR profile of the anterior aspect of the asymptomatic lower leg. The thermodynamic homogeneity of the pathoanatomic milieu is demonstrated, with Pennes' bioheat transfer parameters listed where applicable. Thresholding, affine registration, and subtraction imaging of longitudinal intrasubject TIRI data was performed within the AVISO FIRE data analysis environment at CSIRO's iVEC supercomputing facility, yielding initial indicators of patho-specific features correlating to underlying pathoanatomy. Tomographic T1, T2, and STIR fat saturated MR data of symptomatic subjects was rendered into 3D volumes and registered to 2D TIRI's within Drishti-2 volume exploration software, with a view to elucidation of the pathophysiological correlates of imaged longwave infrared aberration. The implications of the results of the aforementioned analyses are explained. The authors' current investigation into the specific physical mechanisms and phenomenology via which inherent midwave and longwave infrared radiation arises from human anatomy in-vivo are alluded to, with a view to objective increase in specificity and validation of TIRI as a non-invasive, non-ionising, non-contact, portable physiological medical imaging modality. This work falls in line with the third and current phase of the DMO's Joint Project 2060 addressing the acquisition and introduction of new health technologies that enhance deployable health capability, with stress fracture having prevalence as high as 20% in modern military training cohorts [3].

Key Words: Health Surveillance; Infrared Imaging; Stress Fracture; Diagnostic Imaging; MRI; Nuclear Scintigraphy

COMPARISON OF BODY CORE TEMPERATURE DURING A 5 KM MARCH WITH THE MILITARY WORK TABLE GUIDELINES

ALISON FOGARTY, ANDREW HUNT, DANIEL BILLING, MARK PATTERSON

Since commencing at DSTO in October 2006, Alison has worked on thermal and work physiology projects including the Environmental Strain Index Monitor project, the Physical Employment Standards project, OPSTSR 121: Extreme Cold Weather Systems (for the MEAO) and the commissioning, and subsequent use of the thermal sweating manikin to assist DMO in the thermal assessment of new and existing clothing/equipment ensembles

Heat exhaustion and heat stroke are the primary heat-related illness/injuries of concern to military commanders as they significantly impair the health and performance of personnel [2]. To reduce the risk of heat-related injuries during military training, Military Work Tables have been developed by the US Army Research Institute of Environmental Medicine employing an empirical model [1]. These tables employ wet bulb globe temperature (WBGT), work intensity and clothing to derive the work duration where the body core temperature (Tc) elevation will not exceed 2.0°C in 95% of the military population.

These tables have been adapted for the Australian Defence Force Special Forces (SF) population, such that they account for the higher aerobic fitness of the SF population. Soldiers with a higher aerobic capacity generally have an improved heat loss capacity and tolerance to high body core temperatures [3]. Consequently, the SF Work Tables are based on the assumption that SF soldiers will exhibit a lower elevation in Tc for a set amount of work, being at least in the lower 50% of the Army population. While the Military Work Tables are based upon the average soldier experiencing a 1.5°C elevation in Tc, the SF Work Tables are based upon the average soldier experiencing a 2.5°C elevation in Tc, and it is assumed that the SF population Tc response will range from 2.0°C to 2.5°C. The current study measured the Tc response during a 5-km march in a cohort of soldiers applying for entry into SF and then compared these responses to the SF Work Tables.

Seventy-nine male Australian soldiers participated in this study (26.4±3.6 y, height: 179.2±6.2 cm, body mass: 83.0±8.2 kg, body fat: 10.5±4.4 kg, muscle mass: 41.3±4.6 kg, relative maximal oxygen uptake 53.1±3.3 ml.kg-1.min-1). The soldiers were divided into 3 groups and completed the march on 3 separate days. All performed at maximal pace (without running or shuffling) a 5-km march on flat terrain carrying 40 kg. WBGT was 24°C, 24°C and 25°C during the 5-km march on tests days 1, 2 and 3 respectively.

The SF Work Tables sufficiently, although overall conservatively, predicted the elevation in Tc (1.47±0.50°C) during the 5-km march for this population with only one candidate (less than 5%) exceeding the modelled 2.5°C elevation in Tc during

the march. Based upon the slowest march time, the SF Work Table stipulate that the 5-km march should not be conducted at a WBGT greater than 24°C to prevent an excessive rise in Tc. Yet, on one test day the 5-km march was conducted at a WBGT of 25°C without any serious incident or excessive elevation in Tc (1.49±0.49°C). This highlights that the SF Work Tables and associated models are an effective, although somewhat conservative, risk management tool and do not replace the need to constantly observe for signs and symptoms of heat illness/injury and the need to have hyperthermic treatment measures in place.

References

1. Department of the Army. (1988). Field Hygiene and Sanitation (FM 21-10). Fort Sam Houston, TX, US Army Medical Center and School.
2. Gardner, J. W. and J. A. Kark. (2001). Clinical diagnosis, management, and surveillance of exertional heat illness. in K. B. Pandolf and R. E. Burr(eds.) Medical Aspects of Harsh Environments. (1). Washington DC: Borden Institute.
3. Mora-Rodriguez, R., J. Del Coso, N. Hamouti, E. Estevez and J. Ortega. (2010). Aerobically trained individuals have greater increases in rectal temperature than untrained ones during exercise in the heat at similar relative intensities. Eur J Appl Physiol 109(5): 973-81.

Key Words: Heat illness, heat injury, Military Work tables

COOLING METHODS FOR EMERGENCY RESPONDERS IN TROPICAL CONDITIONS

MATT BREARLEY, IAN NORTON, TERRY TREWIN

Dr Matt Brearley is the Disaster Medical Research Program Manager of the NCCTRC, formerly holding the position of Athlete Services Manager at the Northern Territory Institute of Sport, Darwin. Matt earned a PhD in thermal physiology from Charles Darwin University in 2006 studying responses of athletes competing in the tropics and developing pre-cooling protocols. He has worked with elite junior and senior athletes to maximise their performance in the heat and was the heat specialist of the Australian team during the 2008 Olympic Games in Beijing, China.

Aims: To assess the physiological and perceptual responses of emergency responders to simulated protracted incidents in tropical conditions, and to compare the effectiveness of cooling methods during rest periods.

Methods: A total of 120 chronically heat acclimatised emergency responders volunteered across 2 studies. Study 1 consisted of 60 fire fighters participating in a simulated fire fighting exercise of salvaging equipment, HAZMAT containment and confined space operations while wearing fire fighting attire inclusive of breathing apparatus in field conditions (mean outdoor wet-bulb globe temperature of 29.4oC). The work phase lasted for 30 minutes, followed by removal of the fire fighting ensemble for 30 minutes of cooling; repeated 3 times. Fire fighters were assigned to a cooling cohort (1 Shade; 2 Crushed ice ingestion; 3 Immersion in 25oC water; 4 Misting fan) matched for body mass index (BMI).

For study 2, 60 medical staff simulated triaging, resuscitation, mobilising and decontaminating manikins while dressed in level 3 personal protective equipment (PPE) in field conditions (mean outdoor wet-bulb globe temperature of 31.4oC) for 30 minutes, followed by removal of PPE for 30 minutes of cooling by 1. Shade, 2. Crushed ice ingestion, or 3. 25oC water immersion; repeated 3 times. A 4th cohort wore ice jackets during the work phase followed by resting in the shade. For both investigations, an ingestible telemetry pill permitted measurement of core temperature, while tympanic temperature, heart rate, blood pressure, subjective thermal sensation were recorded periodically throughout the cooling phase to assess their suitability as surrogate markers of core temperature.

Results: Average core temperature rose 1.1oC (study 1) and 1.3oC (study 2) respectively during the initial work phase, while the ice jacket blunted the core temperature rise by 0.4oC. During the initial cooling phase, 30 minutes of 25oC water immersion lowered core temperature to below pre-study values, substantially cooler than the shade, crushed ice ingestion and misting fan cohorts. A similar pattern continued throughout the exercise, with the water immersion cohort demonstrating lower mean core temperature following the 2nd work phase (0.5–0.7oC), 2nd cooling phase (0.3–0.6oC) and final work bout (0.3–0.4oC) than the other groups.

Conclusions: These investigations confirm that physical activity while wearing personal protective equipment in a tropical environment promotes rapid heat storage. Temperate water immersion is more effective in lowering core temperature than shade, crushed ice ingestion or use of a misting fan during rest periods, while the ice jacket demonstrated potential to blunt the rise of core temperature during work periods. For protracted incidents, a rehabilitation centre with medical support, hydration and cooling inclusive of temperate water immersion is recommended.

Key Words: Heat, Hyperthermia, Thermal, Water Immersion

VIRGINIA LEWIS, LISA GARDNER, SIMON GRAHAM

A/Prof Virginia Lewis
Virginia is an Associate Professor at the Australian Centre for Posttraumatic Mental Health, University of Melbourne, where she leads a number of applied research projects contracted by DVA and the ADF. She provides expert advice in research and evaluation methodologies across ACPMH. Virginia'pes interests are in applied research, including evaluative research, and, in particular, the policy and practice applications of research findings.

Dr Lisa Gardner
Lisa is a Research Fellow at the Australian Centre for Posttraumatic Health, University of Melbourne, where she manages a number of studies supported by the Department of Veterans Affairs. Lisa has a PhD in stress management and emotional intelligence, and has managed a range of projects including the development of a comprehensive e-learning training program with the Canadian Air Force and a national evaluation of DVA's mental health initiatives.

Mr Simon Graham

Successful rehabilitation for military veterans in Australia has primarily been related to the ability to return to work. This focus has meant that information regarding rehabilitation in areas such as family functioning, health, or overall well-being has not been as well monitored. For the Department of Veterans Affairs (DVA), the introduction of the 2004 model of rehabilitation broadened the definition of veteran rehabilitation to incorporate a psychosocial framework, which allowed for an opportunity to review how "successful rehabilitation" was being measured. This symposium will discuss the theoretical and systematic framework of rehabilitation for veterans, will present the collaborative research undertaken by the Australian Centre for Posttraumatic Mental Health and DVA, and will demonstrate how the evidence from the research has successfully informed the current practice of DVA rehabilitation policy.

Keywords: Veteran rehabilitation, psychosocial rehabilitation, health, veterans

CLOSED LOOP AUTOMATIC SYSTEMS FOR MANAGEMENT OF THE INJURED

GEORGE BECK (US)

George Beck is Vice President of Engineering and Research at Impact Instrumentation Inc., a medical device developer/manufacturer of respiratory care products and measuring instrumentation, located in New Jersey USA.

George is a registered Respiratory Care Practitioner and mechanical engineer that currently sits on the following committees: Society of Critical Care Medicine Task Group for Mass Casualty Critical Care; ASTM E54 Committee on Homeland Security; ASTM F29 Committee on Emergency Medical Services, Chairmen Oxygen and Airway Management Task Group; Undersea and Hyperbaric Medical Society, Closed-Environment Subcommittee and Therapeutics Adjuncts Subcommittees.

Introduction: the role of unmanned aerial vehicles (UAV) has expanded throughout the battlespace. As UAV missions expand to resupply isolated forward operators, interest in their use for transport of ill or wounded warfighters has increased. NATO has created working group (RTG-184) to create a set of safe ride standards for evacuation using UAVs (G-force, etc). In parallel, we sought to identify life support and monitoring requirements and quantify the power, mass and volume needed to support the patient. Method: we evaluated medical kits used by military forces during casualty evacuation (CASEVAC) to develop a minimum standard of care so that functional requirements could be identified. Using these requirements we evaluated commercially available OEM technology to determine the mass, volume and power requirements for these components. We then developed a prototype combined system based on existing technology that allows for practical evaluation of UAV integration. Applicable civilian and military medical device and environmental standards were identified to define the testing and performance needs for the integrated system. Lastly, we developed a method for mitigating the fire risk associated with delivering supplemental oxygen (O2). Results: based on multiple sources we identified the following requirements: patient warming, ventilatory support, IV fluid support and noninvasive physiologic monitoring. Using commercially available technology the system could have: mass = 16 kg, volume = 14,000 cc and require only 300 watts. Discussion: there exists a wide range of thought on what care needs to be provided during CASEVAC and what would be required for life support in a UAV. While O2 is typically associated with mechanical ventilation previous studies from our group demonstrate that no more than ~3 liter/min are required to support multitrauma patients early in their care when O2 is controlled automatically. There is a simple method for preventing O2 build up in the closed volume of the UAV. Conclusions: with or without O2 the power, mass and volume required to provide life support and monitoring of the critically ill patient appears to be achievable. Successful implementation will depend on the development of a seamless concept of operation that results in an integrated set of requirements that addresses the medical needs as well as operation in the UAV and during ground operations (preparation for transport, loading and unloading).

ABSTRACTS Session 30:

THE INTELLIGENT TASKING PROJECT 2010 - AERO EVACUATION COORDINATION IN SOUTHERN AFGANISTAN

BRONTE DOUGLAS

The International Security Forces Afghanistan (ISAF) Combined Joint Medical Cell (CJMED) at NATO Headquarters Regional Command South (Kandahar Airfield) implemented the Aeromedical Evacuation Intelligent Tasking project over a 6-month period from June - November 2010. The project timing coincided with the inaugural contribution of 2 Royal Australian Air Force Health personnel embedded within the NATO CJMED cell. The primary tasking assigned to the Australian personnel was to develop, pilot and implement the Intelligent Tasking project throughout the Southern Afghanistan area of operations.

The summer "Fighting season" of 2010 was a definitive period in the ISAF Campaign Against Terror. Operational tempo was heightened to an unprecedented level with significant surges in US troop numbers and the subsequent multiple, concurrent planned offensive actions throughout this period. Conversely, several other NATO and troop contributing nations were also in the process of planned National draw downs and withdrawal from the Afghanistan campaign during this timeframe. This led to a constant flux in the availability and location of resources required. Aeromedical evacuation assets were limited and remained a significant, challenging factor throughout this period. This unique combination of circumstances generated the need for the Intelligent Tasking project to be undertaken in order to ensure the provision of timely and appropriate, forward, tactical and strategic Aeromedical care platforms across the Southern Afghanistan area of operations.

The success and positive outcomes generated from the Intelligent Tasking project have directly led to substantial change in NATO doctrine regarding Aeromedical evacuation and tasking throughout all areas of operations within Afghanistan. It has also generated significant change within the United States Air Force doctrine and led to a flow on project with respect to the ongoing provision of Tactical "Enroute care" teams. The impact and results of the Intelligent Tasking project may also be highly relevant to the future approach and doctrine of Australian Defence Force Aeromedical Evacuation.

Key Words: Aeromedical Evacuation, Logistics, Tasking, Military nursing, Afghanistan

POSTER PRESENTATIONS

POSTER PRESENTATION

THE RELATIONSHIP BETWEEN TRAINING PROGRAM LINE TOTAL, PARADES AND SPORTS INJURY OF PHYSICAL LEARNERS TRAINING CENTERS ARMED FORCES

MOJTABA KAVIANI, MASOUD MOEINI SHABSTARY, MEHRALI BARAN-CHESHMEH

The purpose of this study was to investigate the relationship between training program line total, parades and sports injury of physical learners training centers armed forces .Subjects of this study, 600 learners training courses 17 and 18 combat Foundation School Military martyr instructor with mean age 22.73 years, the average weight 74.85kg, the average sports history1.8 and average years of military experience 0.7 years who voluntarily participated in this study. Tool in the study were used for data collection, questionnaire was. Gather information from learners at the end was done. Questionnaires to assess the reliability of a pilot study 100 learners at the beginning of training were used. Reliability of the questionnaire Cranach's alpha coefficient on the data obtained from the pilot study 0.80 was reported. Additional information from interviews and field tests such as pathology Lachman was used. Descriptive statistical methods to develop distribution table, the average percentage was used. The results showed that the occurrence of injuries, including stress syndrome (23.8) , muscle strains (8.6), ankle sprain (6.3), stress fracture (3), back pain (7.3), tendon elongation (6.5), knee pain (3.2) percent . Pearson correlation test results showed that the correlations between practicing together, parades, and athletic and physical injuries, respectively, 22.6, 28.5 and 33.4 percent. The significance level P = 0.05 were significant. Most common injuries among soldiers in the area behind the back, knee, thigh, ankle and leg were observed. Low fitness levels, poor heating, lack of attention to individual differences and poor quality of the main causes physical injury.

Key Words: line total training, Parade, sport, Physical injuries

EFFECT OF BASIC MILITARY TRAINING ON KNEE PAIN AND MUSCULAR FLEXIBILITY OF LOWER LIMBS

MOJTABA KAVIANI, MASOUD MOEINI-SHABESTARY, SADEGH NEMATI

Introduction. Knee pain is one of the most common musculoskeletal complaints. Musculoskeletal injuries resulted of overuse, reduce the efficiency of training among recruits underwent basic military instruction. The aim of this study was to determine the effect of basic military training on knee pain and muscular flexibility of lower limbs.

Materials and Methods. 100 soldiers (having no complaint of knee pain) from military t raining center of Shahid Modares (Karaj) were studied . Physical examination of knee and passive range of motion of lower limbs were assessed before and immediately after a 2-month period of basic military training . All musculoskeletal complaints and injuries were documented prospectively during the study. Data was analyzed with SPSS11.5. Wilcoxon and ANOVA were used to compare mean values and significancy level was considered at $p<0.05$.

Results. During the study, 20 soldiers (20%) complained of knee pain . Frequency of positive shrug test increased ($p<0.05$) but

no significant changes in the results of other tests were seen. At the end of the training, flexibility of all tested muscles was improved: Hamstrings (7.91 ± 0.57%), Gastero suleus (25.72 ± 2%), Thigh adductors (32.66 ± 2.52%) and Quadriceps (7.81 ± 0.79%).

Discussion. Pattelofemoral syndrome was the most common finding in new cases of knee pain during the military training period. Due to high incidence of muscle shortness, an appropriate stretching exercise is recommended both to improve flexibility and prevent injuries.]

Key Words: Basic military training, Muscular flexibility, Knee pain

EFFECTS OF DEPLOYMENT ON MENTAL HEALTH IN MODERN MILITARY FORCES. REVIEW OF LONGITUDINAL STUDIES

EVA PIETRZAK, STEVE PULLMAN

Background. Numerous studies presented evidence that operational deployment negatively affects mental health outcomes among military personnel and veterans. These studies were generally of cross-sectional or retrospective design.

Aim. To review longitudinal studies prospectively investigating mental health outcomes of military personnel deployed in recent conflicts.

Methods. Electronic search of MEDLINE database was performed, using relevant keywords and MESH terms. Web homepage of the US Millennium Cohort study was used to obtain the list of all publications.

Results. Twenty five studies fulfilled the inclusion criteria, 4 resulting from the US Millennium Cohort and 21 studies investigating other military populations. Adverse effects included increased incidence of post-deployment PTSD and depression. Individuals with lowest functional scores and those exposed to previous traumatic assault were particularly vulnerable to new onset of PTSD after combat exposure. Factors influencing the incidence of post-deployment PTSD included presence of depression during deployment, combat stress reaction and receiving frontline treatment for it, and the number of negative life events experienced after deployment. Generally, more mental problems were reported on second screening than on first screening immediately after return. Some mental health symptoms (anxiety, depression) improved between deployments, while others (PTSD, panic) did not.

Conclusion. The results indicate that it was combat exposure, not deployment itself that had adverse effects on mental health. Mental health indicators in personnel who were deployed but not exposed to combat were often better than those in non-deployed. Health outcomes and health needs were affected by individual's characteristics and post-deployment life events and changed over time.

Key Words: Health surveillance; deployment health; mental health

POSTER PRESENTATION

HEART HEALTH PROGRAM VETERAN LONG TERM OUTCOMES

DR DESMOND J PERRY, DR MEAGHAN O'DONNELL, MS MELINDA AUSTEN

The Veterans and Veterans Families counselling service has been conducting a 12 month cardiovascular health program for Veterans since 2000. There have been two reviews of the program using a range of data sources and methodologies to gauge the effectiveness of the program. Following the 2007 review there was a change in psycho-educational curriculum, data collection protocols and the program was tendered out to a new national provider. This meant that by 2010 there was a complete data set from HHP participants who undertook the re-developed program. This research project allowed an assessment of long term gains sustained by a sample of over 400 of the 2000 participants. The research showed that participation in the HHP was associated with significant improvements in physical and mental health. There was a high level of continued involvement in cardiovascular health at 18 month after completion of the program. The data allowed the profiling of participants who were more likely to continue the HH activities, and who sustained better outcomes from the program. It also identified barriers to maintaining an exercise program. Rationales for the program changes in 2007, and recommendations about further changes to the program based on the research outcomes are discussed.

Key Words: Heart Health, Outcomes, Mental Health.

FOOD SECURITY IN AUSTRALIA - A COMPONENT OF NATIONAL SECURITY

DEREK MOORE

Historically, food security has long been a component of national security, in many countries over the centuries.The Roman Empire accessed food and other materials from its outlying conquests and transported such resources back to Rome. Other examples include the Royal Navy's blockade of Germany during World War One. This blockade was a key factor in the Allied victory, due to the hunger and demoralisation of both the civilian and military populations in Germany and on the Western Front.

During both World War One and World War Two, the German U- Boat campaigns against Allied shipping were very serious and could have resulted in significant malnutrition and possibly starvation in Great Britain.

In Australia, from 1942 to 1945, major agricultural and food processing efforts were able to provide enough food for the Australian Military Forces, the civilian population (with some rationing), large numbers of United States Forces in the South West Pacific area and the balance was exported to the United Kingdom, where more stringent rationing was experienced by the civilian population than in Australia.

Australian nutrition scientists made significant contributions to the enhancement of the Australian combat ration packs e.g. the inclusion of adequate sources of the B Group vitamins, such as thiamine, which had previously been marginal or deficient.

Today, nutrition scientists, including dietitians and nutritionists, continue to play a role in the development and revision of recommendations regarding fresh food feeding, acceptable and durable combat ration packs plus nutrition education strategies for delivery to ADF personnel.

Feeding the entire Australian population is critical to national security for many reasons, including those of being able to adequately nourish the entire Australian Defence Force and all civilians working in Defence and Defence-related industries. Challenges include factors such as soil degradation and future water shortages in traditionally important agricultural regions, partly due to climate change. Possible fuel shortages may well be a complicating factor. This paper will explore various aspects of contemporary food security.

Key Words: Food security, national security, nutrition

SURGICAL MANAGEMENT OF CHRONIC BACK PAIN - A LONGDITUDINAL CASE STUDY

DR BJ MANION CAPT, DR M THOMPSON

Clinical practice
Back pain accounts for a high disease burden in the modern military. It is prevalent among those on active service, and has a close but poorly defined relationship with psychological stress and psychiatric predispositions. Proportionally higher rates are seen across all military service compared with the civilian population, with rotary and armoured personnel showing particular vulnerability. Historically back pain has been difficult to treat, with particular problems encountered in selection of appropriate surgical candidates and appropriate surgical interventions. Once multiple operations have been performed the clinical waters becomes muddied, and makes further management of what can be significant and disabling symptoms even more challenging. Our poster presents a longditudinal study of a case of non specific back pain, and the escalating surgical modalities used in an attempt to control symptomatology. It highlights the difficulties involved in the current practice management of non specific back pain, and depicts the complexity which develops as patients undergo multiple procedures at multiple institutions. The sequential imaging of this case effectively illustrates the cascade of interventions, and serves as a reminder that prevention coupled with an early and aggressive multidisciplinary management strategy is likely to be the best way of limiting the impact of this disease.

Key Words: Back Pain, Clinical Practice, Spinal cord stimulator, Chronic Pain, Spinal fusion, Workplace health and safety, Radiology

JOURNAL OF MILITARY AND VETERANS' HEALTH

CALL TO AUTHORS

The Journal of Military and Veterans'Health is a peer-reviewed quarterly publication published by the Australian Military Medicine Association. Its Editorial has identified the themes for the journal's 2012 editions they are:

Edition	Theme	Publication Date	Closure of article submission date
Vol 20 No. 1	Heat and Cold in the Military	16 January 2012	4 November 2011
Vol 20 No. 2	History of Developments in Military Medicine	16 April 2012	3 February 2012
Vol 20 No. 3	Mental Health	16 July 2012	5 May 2012
Vol 20 No. 4	Veterans' Health	15 October 2012	3 August 2012

Categories for the above include:

Original Research, Short Communication, Review Articles, Reprinted Articles, Case Studies, Abstracts from the Literature, Biographies, History, Book Reviews, Commentary and View from the Front.

The JMVH would be delighted to receive articles for consideration on these themes. Please note that although these are the themes for 2012, we encourage authors to continue to submit articles on a range of topics on military and veterans' health.

To submit please visit the JMVH website www.jmvh.org. where you can also find the Instructions to authors.

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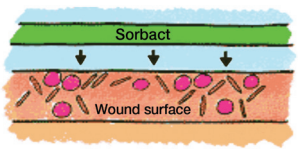

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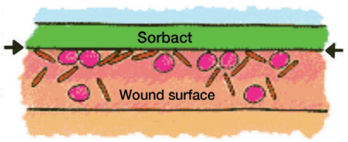

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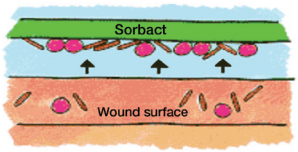

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