A Clinical Miscellany I

Hypoxia below 10,000ft – An under-appreciated risk for helicopter aircrew

Adrian Smith

Introduction: During routine aviation medicine training, rotary-wing aircrew are instructed that the impact of hypoxia on them from flying in unpressurized cabins up to 10 000 ft above mean sea level (AMSL) is relatively small and has few implications for aviation safety. Such reassurance is based on experiments conducted on resting subjects and may not reflect the true impact of hypoxia in aircrew engaged in operational tasks. This was explored in two coordinated studies. In Study 1, a survey listing common symptoms of hypoxia was distributed to Australian Army helicopter aircrew who had operated at altitudes up to 10 000 ft AMSL.

Results: Symptoms consistent with hypoxia were reported by 86.6% of non-pilot aircrew and 60.9% of pilots. 60% of non-pilot aircrew reported four or more symptoms, compared with only 17% of pilots. Commonly-reported symptoms included difficulty with calculations (45%), feeling light-headed (38%), slowed reaction time (38%), and confusion (36%). Loadmasters reported more symptoms (mean 5.4) than pilots (mean 2.2) ($p < 0.001$). Aircrew described operationally-significant symptoms as low as 6500 ft. Study 2 explored the impact of physical activity below 10 000 ft on the development of hypoxia. Six subjects exercised at 30 W and 60 W for four minutes at sea level, 2000 ft, 7000 ft, and 9000 ft. Oxygen saturation (SpO2), psychomotor function, and symptoms were recorded at rest and during activity. SpO2 decreased abruptly with physical activity; this was small at sea level (1%) and 2000 ft (2.2%), but substantial at 7000 ft (4.3%) and 9000 ft (5.5%) ($p<0.001$). SpO2 fell to 88.1% at 7000 ft and 85.7% at 9000 ft, returning to near-resting values within three minutes of stopping exercise. The number of subjects reporting symptoms of hypoxia, the number of symptoms reported, and the mean symptom score were all significantly higher during activity than rest at each altitude ($p<0.001$). Response time during exercise for one subject was prolonged by 10-15% relative to rest, with a 25-30% improvement when breathing oxygen ($p<0.05$). Conclusion: Helicopter aircrew report symptoms consistent with hypoxia at altitudes much lower than they are taught, loadmasters more so than pilots. Physical activity below 10 000 ft can produce hypoxemia and symptoms of hypoxia, along with psychomotor impairment in susceptible individuals. It may be inappropriate to emphasize during aviation medicine training the benign nature of altitudes below 10 000 ft for a non-resting population such as helicopter aircrew. Helicopter aircrew should be aware that physical activity as low as 7000 ft can produce hypoxemia and symptoms of hypoxia similar to that which would normally be expected in a person resting at approximately 12 000 – 15 000 ft.

Contact author: Dr Adrian Smith,
PO Box 244, Surry Downs, SA 5126
Email: docamsmith@hotmail.com

Mission command, risk management and high performance climates on peace keeping operations

Melissa Harries

Organisational climate can promote or inhibit individual and collective performance. Assessing organisational climate is increasing in appeal to Land Command COs as maintaining the human edge of capability with ever increasing operational tempo becomes critical. Climate analysis can be used not only to predict a unit's organisational effectiveness but also aids to identify at what levels interventions can improve capability by providing commanders with the information needed to manage the dimensions of climate. Whether or not a high performance climate exists is strongly dependent on leadership style (Jans and Frazer-Jans, 2002).

Leaders, by their action or inaction communicate norms and values to subordinates. Recent studies in both the military and civilian world have highlighted the contribution of middle and junior leadership to organisational effectiveness (Buckingham and Coffman, 1999, Jans and Frazer Jane, 2002). Leaders make their impact, in part, through the kind of performance culture they create. Developing a high performance climate in the Army will depend much on the management and leadership style of Pl Comds, Pl SGTs and Sect Comds.

A high performance climate in the ADF is characterised by four distinct features (Jans and Frazer-Jans 2002): Goal clarity and focus; empowerment to act; teamwork and cooperation; and an emphasis on innovation and "learning from doing". Good leaders have clear and well articulated vision, focus and support action, engender teamwork and encourage

people to be innovative and share their experiences. Personnel who work in high performance climates outperform those who don't (Jans and Frazer-Jans, 2002). How does the Army build high performance climates? Jans and Schmidtchen (2002) posit that the consistent application of the command philosophy of Mission Command is consistent with the elements of a high performance climate.

Mission Command requires leaders to clearly define intent, allocate tasks, provide resources and define constraints on actions. Mutual trust and respect between commanders at all levels is paramount and consequently an acceptance of risk is required. The utilisation of Mission Command should therefore produce outcomes consistent with high performance climates such as: 1. increased individual performance; 2. greater collective performance (a high performance climate); and 3. positive impacts on mental health. The author will present her findings on the relationship between Mission Command and individual performance, performance climate and mental health of personnel currently deployed on OP ASTUTE.

Contact author: CAPT Melissa Harries, 1 Psych Unit, 373 Avoca Street, Randwick, NSW 2031
Email: melissa.harries@TMR.defence.gov.au

Predicting the unscheduled dental visit for the Australian Defence Force

Greg Mahoney, Gray Slade

Background: The Defence Dental Service has used the Denclas classification for dental fitness since the early 1970s. This system classifies members into 4 categories; dentally fit with no dental problems; dentally fit with dental problems that are unlikely cause problems in the next 12 months; dentally unfit requiring treatment; and dentally unfit requiring immediate treatment. While this classification system has been useful tool for dental triage, it has not been predictive of whether a member likely to become a dental casualty in the next 12 months.

Aim: To determine whether a better dental classification system be designed that will reflect Australian Defence Force members' risk of being a dental casualty by identifying additional markers that are easy to collect and that are predictive.

Methods: A prospective cohort study was conducted on 875 deployable Australian Defence Force (ADF) personnel between the ages of 17-56. Participants were enrolled in the study during their Annual Dental Examination (ADE) in 2006 and a questionnaire was completed which included demographic, lifestyle, dental history and clinical information. At this point data was also recorded on whether they had had an Unscheduled Dental Visit (UDV) in the previous 12 months. In 2007, during participants' next ADE, data was again recorded on their UDV history. Variables that were associated with increased risk of UDV were then entered into a multivariable logistic regression for analysis.

Results: A classification system based on risk of being a dental casualty yielded significantly improved sensitivity and specificity over the present Denclas system with area under the receiver operating curve of 0.76 compared to 0.59. The final model contains a variety variables which are derived from participants' demographic, lifestyle, dental history and clinical information.

Conclusion: A dental classification system based on a member's risk of becoming a dental casualty is possible. This research is supported by: Centre for Military and Veterans' Health, Department of Defence and the Australian Dental Research Foundation.

Corresponding author: GPCAPT Greg Mahoney, 9/188 Stratton Terrace, Manly Qld 4179
Email: g.mahoney@uq.edu.au

Ischaemic heart disease risk factors in the ADF: An occupational medicine perspective

Neil Westphalen

At present there is no formal ADF process for screening medical fitness to deploy with respect to cardiac risk. Although some members may be deploying who are at high risk, it is far more likely that other members are prevented from deploying who may in fact be medically fit

Considerable effort has been expended on civilian medical standards for safety-critical occupations, most recently civilian rail workers and NSW harbour pilots (both based on those used in the civil aviation industry). These use a point score based on the American Heart Association's (AHA) Coronary Disease Risk Factor Prediction Chart.

The aviation and rail industries use 15 points (5% risk at five years, and 10% risk at ten) as the action cut-off. However, the main consideration for both industries is preventing sudden incapacitation, rather than assessing their ability to deploy. This mitigates against the ADF using 15 points because the deployment cut-off would be too low.

Recommend the following:

- The AHA Chart be used as the standard cardiac risk screening tool for ADF members, as part of the CPHE every five years, or as clinically indicated.
- A point score of 18 be used as the action point score for stress ECG and cardiology review, such that:
- Members without active disease and a points score of less than 18 on treatment are MEC 2 to facilitate monitoring, the periodicity of which is subject to cardiologist advice.
- Members with active disease, or have a point score of 18 or more are MEC 3 pending treatment. Members who are considered MEC 2 on clinical grounds despite a points score exceeding 18 or more should be confirmed by the MECRB.

Contact author: CMDR Neil Westphalen, 34 Montebourg Meander, Port Kennedy, WA 6172
Email: neil_westphalen@bigpond.com

Peri-operative audit in the ADF: Initial experience from AUSMTF-1, Afghanistan

S Neuhaus, B Londregan, R Mallet

Background: Perioperative audit and peer review is a normal part of surgical practice and forms an important component of the clinical governance framework surrounding (Level 3) surgical management of casualties in the ADF. ADF Surg Assist is a peri-operative clinical audit tool designed to provide structured collection of peri-operative data. This data is used to facilitate improvements in surgical and anaesthetic care provided on ADF operations. The tool was trialled during the recent deployment of an ADF surgical team (AUSMTF-1) to Afghanistan as part of the Role 2 (level 3) Dutch health facility in Tarin Kowt.

Scope: This paper will address the nature of surgery undertaken during the AUSMTF-1 deployment and recommendations for ongoing improvement of the ADF Surg Assist tool and perioperative audit processes.

AUSMTF-1 personnel performed 67 surgical procedures on 45 casualties during the deployment. 60 patients underwent general anaesthesia. A minority of patients were ISAF personnel with the major casualty group undergoing surgery being Afghani children (28%). The most common procedure performed was wound debridement.

ADF Surg Assist effectively enabled capture of verifiable demographic and treatment date for all patients undergoing surgery by the AUSTMTF-1 team. A number of recommendations were made including:

1. Incorporation of anaesthetic data;

2. Expansion of performance indicators;

3.Data capture of disposable/expense surgical items.

Use of ADF Surg Assist on future rotations to Afghanistan will provide a robust dataset and enable assessment of outcome data (morbidity and mortality) and benchmarking against Australian National Standards.

Conclusions: The recent deployment of ADF Surg Assist on AUSMTF-1 is the first time that verifiable peri-operative data has been obtained during an Australian deployment involving Role 2 (level 3) surgical capability. This represents an important commitment of the ADF to ongoing improvement in the clinical care provided to Australian servicemen and women undergoing surgery on overseas operations. Further, it provides an opportunity to review this valuable data and to close the audit loop by providing clinical 'lessons learned' back to the ADF and the wider surgical and anaesthetic community.

Corresponding author: LTCOL Susan Neuhaus, 3rd Health Support Battalion, Keswick Barracks, Anzac Highway, Keswick, SA 5035
Email: susan.neuhaus@defence.gov.au

Mobile field regimental aid post

Andrew Gordon

Any military medical service should be set up and ready for handling of casualties within minutes of stopping at any location. I modified an 8 foot x 4 foot box trailer (2.44 m x 1.22 m) so as to accommodate a standard NATO stretcher, 7 foot 6 inches (2.3 m) and ensure that all of the RAP equipment is well protected from the elements yet readily accessible soon after stopping.

This trailer carries vertical support poles, horizontal ridge poles, a 14 x 14 tent plus CES. The medical stores are in bin pack boxes. The master working side is the left hand side, passenger side of the trailer based on Australian road conditions.

The boxes on the other side of the trailer carry more stores, administration stores, patient comfort stores and still more medical stores.

The lids of the bin pack boxes fold down horizontally so that they are at a comfortable working height.

Lists of standard treatment protocols e.g. mg / kg of drug quantities are under protected covers on the inner side of the lids. All the medical stores are documented in lists which could be re-worked into a data base; contents of each box, the location of each item.

On the front triangle of the trailer, larger and more awkward items are carried e.g. chairs, stretcher supports, generator, steriliser. The tarpaulin 6 m x 4 m provides protection from the sun and rain and the airflow. The trailer can be parked in or beside a 14 x 14 tent.

The packing up time is short and much better than packing onto the back of a truck.

The ergonomics are correct because all of the items of equipment are such that they can be handled by an average sized soldier or average strength.

A battery is carried so that the trailer has independent lighting independent of the towing vehicle.

The trailer is self sufficient as is the RAP in terms of initial water supply and initial reserve fuel supply.

Contact author: Dr Andrew Gordon, John James Medical Centre, Suite 19, Level 1, 175 Strickland Crescent, Deakin, ACT 2600
Email: andrew.gordone5@webone.com.au

Obesity management in the RAN: An occupational medicine perspective

Neil Westphalen

Health Directive 206 notes that obesity is an important risk factor for cardiovascular conditions. However, notwithstanding its importance as a public health concern it is first and foremost a health promotion issue that cannot be managed as a medical problem in isolation from other influences. From an occupational medical perspective, health promotion issues therefore should not preclude ADF members from deploying on medical grounds.

In FY 06-07 FBWHC performed 630 MECs on a population base of 2500 (both at sea and ashore). Of these 10.1% were for obesity per HD 206, half of whom were MEC 301, of who about a third were offered a waiver. However, discussions with FBWHC MOs suggest that the total number of obesity cases could be underestimated by an order of three, which would equate to about 7.7% of PNF members.

HD 242 on the ADF Health Promotion Program notes the various criteria to be met for health screening, however the manner in which BMI is used for obesity does not comply. It is argued HD 206 does not comply with the Disability Discrimination Act unless it can be demonstrated that there is a specific ergonomic or related problem from their weight that precludes them from performing an inherent requirement of their job - and this is not a medical responsibility Workplace health promotion programs are an integral part of any occupational health system. However they are distinct from other responsibilities with respect to workplace occupational health and safety. Encouraging healthy lifestyles is laudable, however ADF obesity management should not be a higher priority than other workplace health issues. Workforces are not randomly-selected captive audiences to whom community health promotion programs can be simply applied. It is economically reasonable and beneficial to the general community to reduce health risks, however any long term health investment should not occur at the expense of the immediate ability of employees to perform their normal duties (or in the ADF's case, affect their deployability). Weight status should therefore be de-linked from fitness-to-deploy, unless:

- The member has complications from their obesity that directly impacts on their ability to deploy. Such cases should be managed on their clinical merits by health staff.
- The member has ergonomic or other non-medical problems related to their size that precludes them from performing their job at sea. Such cases should be managed by divisional staff.

Contact author: CMDR Neil Westphalen, 34 Montebourg Meander, Port Kennedy, WA 6172
Email: neil_westphalen@bigpond.com

The Millennium Cohort

Understanding the long-term health challenges of military service: the US Millennium Cohort Study

Tyler Smith

Background/Objectives: Many health questions were unable to be answered after the 1991 Gulf War due to limitations of retrospective and cross-sectional study designs. The U.S. Millennium Cohort Study was designed in the late 1990s in response to U.S. Department of Defense, Congressional, and Institute of Medicine recommendations for coordinated prospective research to determine how military occupational exposures, including deployment-related exposures, affect long-term health. Soon after the launch of the Millennium Cohort Study in 2001, wars in Afghanistan and Iraq began. From the onset of the wars, U.S. and coalition service members have been exposed to intense and prolonged physical and psychological stressors that may have profound impact on the health and functioning of deployers, and may create public health challenges in a large population beyond their time in military service. The Millennium Cohort Study is prospectively answering mental and physical health concerns and will continue to follow this large cohort of active duty, Reserve, and National Guard during and after their service.

Methods: In collaboration with all U.S. military service branches and the U.S. Department of Veterans Affairs, the Millennium Cohort Study was launched in July 2001 to follow the health of more than 150,000 active duty, Reserve, and National Guard service members through 2022. The Cohort consists of a stratified random sample of US military personnel surveyed every 3 years until the year 2022. The questionnaires collect self-reported data on demographic information, medical conditions, symptoms, occupations and exposures, and contain validated instruments to assess physical and mental health, including posttraumatic stress disorder (PTSD) and depression. Questionnaire data are linked with electronic deployment, hospitalization, ambulatory, mortality, pharmaceutical, vaccination, reproductive, and exposure data.

Results: Approximately 77,000 service members enrolled in the first panel of the Millennium Cohort (July 2001 to June 2003), and more than 55,000 participants provided complete prospective data at the first follow-up (June 2004 to February 2006). Additionally, more than 31,000 service members enrolled and completed a baseline questionnaire in 2004-2006. The current enrollment/follow-up cycle (May 2007 to August 2008) has enrolled more than 40,000 additional cohort members and obtained follow-up questionnaire data on over 70% of the Cohort who submitted baseline questionnaires in 2001-2003 or 2004-2006. Nearly 40% of this Cohort had operational deployment experience during this time. Detailed multivariable analyses have revealed that: (a) the baseline prevalence of mental health challenges in the Cohort compares favorably with other military and civilian populations, (b) deployment, per se, does not increase the risk for mental health disorders such as posttraumatic stress disorder (PTSD), but combat-like exposures greatly increase such risk in deployers.

Conclusions: The Millennium Cohort Study is providing new and valuable insights about the mental health implications of military service, as only a prospective epidemiologic study of this magnitude can provide. The Cohort has defined mental and physical health and behavioural changes in temporal association to military deployment in a large population-based setting. Future follow-up of these cohort members will continue to shed light on new-onset, resolution, and recurrence of symptoms and illnesses that may be associated with military service over time.

Contact author: Tyler Smith, Director, DoD Center for Deployment Health Research Naval Health Research Center and Principal Investigator, Millennium Cohort Study, 140 Sylvester Road, San Diego, California, USA
Email: Tyler.Smith2@med.navy.mil

A longitudinal investigation of the mental health of military caregivers before and after deployment in support of the wars in Iraq and Afghanistan

Isabel Jacobson, Cynthia LeardMann, Edward Boyko, Timothy Wells, Margaret Ryan, Besa Smith and Tyler Smith

Background: The association between posttraumatic stress disorder (PTSD) and exposure to trauma among healthcare workers has been documented in both civilian and military populations. To date, only limited cross sectional studies have been conducted to assess PTSD or depression among caregivers deployed in support of the current wars in Iraq and Afghanistan.

Methods: The Millennium Cohort Study was designed to prospectively evaluate the long-term effects of military service on health over a period of 21 years. The study was launched in July of 2001, and 77,047 participants were enrolled by June of 2003. From June 2004 to February 2006, 55,021 (71.4%) of these participants were followed up. The Millennium Cohort Study collected data containing information on military occupation, depression, PTSD, and trauma exposure. Additionally, deployment dates were available from electronic military data. The outcomes for this study were new-onset of symptoms of PTSD or depression. The population was stratified by deployment status into three groups as follows: those who deployed and self-reported combat exposures, those who deployed and did not self-report combat exposures, and those who did not deploy. Within each stratum, logistic regression modelling will be used to examine the likelihood that caregivers will develop symptoms of PTSD or depression compared to individuals in all other occupations.

Results: Of the 55,000 Millennium Cohort participants with longitudinal data, approximately 25% have deployed in support of the wars in Iraq and Afghanistan, and approximately 12% are military caregivers. In addition, about half of those who deployed were exposed to combat or trauma. The estimated prevalence of PTSD and depression among follow-up participants is 5% and 9% respectively. Analyses are ongoing.

Conclusions: Quantifying the risk of PTSD and depression is critical to understanding the scope of these mental health problems among those providing care. These results may offer evidence that specialized training to cope with trauma may be necessary for caregivers who are sent to combat areas. Continued prospective analyses of this population will lead to better understanding of the course of these disorders and the long-term impact of military deployment on these important health outcomes.

Corresponding author: Isabel Jacobson, Center for Deployment Health Research, 140 Sylvester Road, San Diego, CA, USA
Email: Isabel.jacobson@med.navy.mil

Anthrax and smallpox vaccination in the Millennium Cohort: Validation and measures of health

Cynthia LeardMann, Besa Smith,Tyler Smith, Timothy Wells, Robert Reed and Margaret Ryan

Background: Concerns about adverse health effects from anthrax and smallpox vaccinations have prompted many studies. Self-reported vaccination data are commonly used in epidemiologic research and may be used to determine vaccination status during a bioterrorist attack. While important to measure agreement between reported information and other sources when possible, the reliability of self-reported smallpox and anthrax vaccination data has not been established.

Objectives: To compare self-report and electronic records for smallpox and anthrax vaccination and to examine variation in vaccination agreement as it pertains to subjective and objective health measures.

Methods: Data from the Millennium Cohort Study, a large prospective study launched in 2001 to evaluate risk factors related to service in the United States' military, were used in this study. For each vaccine, concordance status was separated into four categories based on the agreement between self-reported and electronic vaccination records. Descriptive measures and kappa statistics were used to compare self-reported anthrax and smallpox vaccination with electronic vaccination records for over 50,000 participants of the Millennium Cohort Study. Multivariable modelling adjusting for potential confounders was used to investigate vaccination agreement status and health metrics, as measured by the 36-item Short Form Health Survey for Veterans (SF-36V) and hospitalization data.

Results: Excellent (kappa=0.80) and substantial agreement (kappa=0.62) was found between self-report and electronic recording of anthrax and smallpox vaccination, respectively. For both vaccines, there were no differences in hospitalization experience by vaccination status. However, those who self-reported anthrax vaccination but had no electronic confirmation had consistently lower measures of functional health, as measured by the SF-36V. Lower measures of subjective health were also found for three of the eight self-reported functional health scales among participants who reported receiving a smallpox vaccination without electronic confirmation.

Conclusions: These results indicate strong reliability in self-reported anthrax and smallpox vaccination and that vaccination is not associated with measurable decrements of health among Cohort participants. While overall scores of the SF-36V scales suggested a healthy population, participants who self-reported vaccination with no electronic documentation reported lower measures of health and may have health challenges that deserve further research.

Corresponding author: Cynthia LeardMann, Department of Defense Center for Deployment Heath Research, 140 Sylvester Road, San Diego, CA, USA
Email: cynthia.leardmann@med.navy.mil

Training I

The accuracy of hypoxia awareness training in military aircrew

Dr Adrian Smith

Introduction: A person's manifestations of acute hypoxia are unique and not believed to change dramatically over time. Previous studies have found that significant proportions of aircrew who experienced hypoxia-related incidents were able to recognize their 'hypoxia signature' because of similarity to symptoms they experienced during hypoxia awareness training. This study aimed to explore the degree of similarity between the symptoms experienced during acute hypoxia and those remembered from previous hypoxia awareness training.

Methods: A questionnaire listing 22 symptoms of hypoxia was distributed to aircrew during aviation physiology training - at the beginning of the hypoxia lecture and again after hypoxia awareness training.

Results: Cognitive and psychomotor impairment dominated the symptoms reported after acute hypoxia as well as the symptoms remembered from previous training. Aircrew reported a mean of 16 hypoxia symptoms on both surveys. 65% of aircrew experienced during acute hypoxia the five symptoms they remembered to be dominant from previous training; 57% of aircrew remembered from previous training the symptoms that dominated their experience of acute hypoxia.

Conclusions: The level of agreement between the symptoms aircrew describe after acute hypoxia and the symptoms they remember several years later suggests that hypoxia awareness training is an effective method of enabling aircrew to recognise their 'hypoxia signature'.

Contact author: Dr Adrian Smith,
PO Box 244, Surry Downs, SA 5126
Email: docamsmith@hotmail.com

Meeting the challenges of training the military surgeon

Andrew Davidson, Michael Morgan

The importance of the military surgeon cannot be overestimated. However, with the increasing trend towards subspecialisation amongst surgeons, the complex skill set required of a military surgeon simply cannot be provided during traditional specialist surgical training.

Currently, limited opportunities exist for additional skill training for military surgeons. The Early Management of Severe Trauma (EMST) and Definitive Surgical Trauma Course (DSTC) are excellent short courses designed to introduce the military surgeon to the principles of trauma surgery. However, a more thorough and detailed exposure to the complexities of trauma craniotomy, thoracotomy, vascular control, surgical airway management, and damage control surgery cannot be covered in great detail without intensive immersion in a surgical environment.

Although experienced ADF surgeons may have civilian or operational experience in these aspects of military surgery, and continue to perform admirably in a variety of operational and humanitarian deployments, the limited exposure of the newer generation of surgeons to this specific set of military surgical competencies requires a unique solution.

The Australian School of Advanced Medicine (ASAM) at Macquarie University has changed the face of medical training in Australia, by bringing together a group of world-class researchers, clinicians, and educators to create an innovative competency-based training program with a focus on future trends in medicine. The school offers post-fellowship sub-specialty training for doctors, with a range of higher degrees available.

ASAM is currently developing a Master of Advanced Surgery program in Military and Remote Surgery, which could potentially be undertaken by FRACS-qualified surgeons seeking a qualification that signals mastery of additional skills and competencies in military surgery. The program would include modules in ethical surgical practice, teaching and research, and a detailed set of surgical competencies tailored specifically to the needs of the military surgeon.

Over the course of the next 12 months a state of the art academic, research, and clinical facility will be completed at Macquarie University, incorporating the Macquarie University Private Hospital and Macquarie University Clinic (including the Centre for the Advancement of Medical Education). Facilities will include a cadaveric

anatomy laboratory, and a modern clinical skills and simulation centre.

The solution to meeting the challenges of training the military surgeon may lie in a potential collaboration between the ADF and the Australian School of Advanced Medicine at Macquarie University.

Corresponding author: LCDR Andrew Davidson, Australian School of Advanced Medicine, Macquarie University, Level 1, 3 Innovation Road, Macquarie University, NSW 2109
Email: asdavidson@optusnet.com.au

Simulation in pre-deployment activities for Australian military medical teams

Susan Neuhaus, Richard Mallet

Background: Over recent years there has been an explosion of interest in the benefits of simulation in health care. It is increasingly recognised that simulation can replace the reality of some aspects of traditional clinical education and training. Military Medicine in all countries faces similar challenges; to train medical personnel in peace for the realities of war. This is particularly relevant to the Australian Defence Force (ADF) where the ability to train for battlefield trauma or austere military settings is limited by the nature of Australian civilian trauma.

Scope: In early 2008, an Australian Army medical team (AUSMTF-1) deployed to provide surgical and intensive care services to NATO-led International Security and Assistance Force (ISAF), US-led Operation Enduring Freedom (OEF). AUSMTF-1 was the first ADF mission to successfully integrate into a NATO Role 2 military hospital. Lessons learnt from previous ADF medical commitments in Balad – Iraq, contributed to this success. AUSMTF-1 comprised regular and reserve personnel drawn from the 1st and 3rd Health Support Battalions of the 17th Combat Service Support Brigade.

The success of health missions mounted by the ADF are contingent upon optimising the dynamics of diverse teams of specialists drawn from medical units based all over Australia. Pre-deployment activities for the mission to Oruzgan Province, Afghanistan were focused, therefore, upon integrating the collective medical and military experience of all team members. These activities included the conduct of simulation training within the Sydney Medical Simulation Centre based at the Royal North Shore Hospital (RNSH). Additionally, further simulation training was conducted in a US Medical Simulation Training Center (MSTC) en-route to Afghanistan. All AUSMTF-1 personnel were exposed to training simulations and scenarios allowing them to practice triage, resuscitation, team-building and damage control surgery principles. All training was orientated toward the management of complex trauma and battle casualties.

Use of sophisticated medical simulation training is not new to the ADF. What has changed, is the environment within which Australian military medical teams are required to provide combat health support. Australian medical personnel must be provided appropriate training and pre-deployment preparation. The technology within RNSH and MSTC allowed the use of life-sized human patient simulators. During medical simulation a range of physical and physiological parameters were continuously modulated in response to interventions made by AUSMTF-1 personnel reacting to operationally relevant clinical scenarios. The use of video recordings and scenario debriefs provided excellent feedback and cemented the clinical learning experience.

Conclusions: Medical simulation training continues to demonstrate tremendous potential as a tool for future education and realistic pre-deployment training of Australian military medical personnel.

Corresponding author: LTCOL Susan Neuhaus, 3rd Health Support Battalion, Keswick Barracks, Anzac Highway, Keswick, SA 5035
Email: susan.neuhaus@defence.gov.au

Getting the BASICs of critical care right - A model for military medical education

Anthony Holley, Robert Boots, Ross Freebairn, Jeff Lipman

Basic assessment and support in intensive care (BASIC) is an international critical care course which was originally developed in 2003 by Fellows of the Joint Faculty of Intensive Care Medicine, Australasia, at The Chinese University of Hong Kong. The vision in developing the course was to provide an educational package for those commencing a career in critical care, as well as non intensivists who may intermittently be called upon to care for the critically ill. The course is unique in that it is available to both doctors and nurses. This presentation will provide insight into the course and consider the educational strategies employed to enhance the learning experience. More than 25 courses have been conducted across Australasia, Hong Kong, South Africa and the course has also been taught in a number of developing countries including Cambodia, India and Indonesia. A pilot course was conducted at 2 Health Support Battalion, Enoggera in September of 2007 and was attended by 24 ADF personal, representing all three services. More