• Introduction to Military Medicine Course
• AME of DCI
• Norovirus Outbreak
• Priapism on Operation
• Honours and Awards

The Journal of the Australian Military Medicine Association
AMMA/CCMT JOINT CONFERENCE

Australian Military Medicine Association and Controversies in Civilian & Military Trauma
Gold Coast Convention & Exhibition Centre, Gold Coast, Queensland

Thursday 29 October 2009
Controversies in Civilian and Military Trauma Workshop

30 October – 1 November 2009
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Journal of Military and Veterans’ Health

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STATEMENT OF OBJECTIVES
The Australian Military Association is an independent, professional scientific organisation of health professionals with the objectives of:

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

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

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Once again JMVH demonstrates the diversity of military medical practice with an array of papers all relevant to those working in health service support to Defence Forces.

With somewhat conflicted interest in the paper reporting on Centre for Military and Veterans’ Health Introduction to Military Medicine course, I can testify that this is worthwhile reading if only to be aware of the direction of vocational training in our field. The course has been conducted now over two semesters via on-line delivery through the University of Queensland. The report not only describes this first year, but also the role such a course will play in the evolution of vocational military medical education as partnerships between Defence and University produce courses to meet Defence requirements. Units like the Australian Defence Force Academy are now well established and functioning examples of such a relationship, however, this is a new group in Health Service Support.

It is never difficult to extol the variety of clinical experience available in military and veterans’ health to health practitioners considering a career in our field. The paper by Stephenson illustrates well the marriage of knowledge of hyperbaric and hypobaric medicine necessary in the management of Decompression Illness cases in remote and military environments. Many military health practitioners will need to develop an understanding, if not experience and expertise, in both these niche areas of medicine uncommon in civilian practice. Stephenson provides a thorough grounding in the basic management of Decompression Illness before expanding upon the complexity of higher level management requiring rotary wing or fixed wing aeromedical evacuation.

Communicable disease and the peculiarities of management within the close quarters and arduous environments of military service have been an issue for Miliary Health Services since the Tatars moved west. Investigation and management of these non-battle casualties are of military significance and a core skill of military health practitioners. These skills are required to maintain operational manpower resources as well as ensuring minimal civilian population impact. The Thomas’s describe an outbreak of Norovirus among Army personnel in south Queensland where both these issues are important. Notably, while we believe this is the first report of such an outbreak, Norovirus is not currently a civilian reportable (or notifiable) disease, however, such an outbreak did require reporting in the military health system.

Management of communicable disease as a core military health skill has established Public Health as a domain of military health practice. Professor Peter Leggat, a Public Health Consultant and military physician on the Editorial Board of JMVH, has reviewed Essential Public Health: Theory and Practice by Gillan, Yates and Badrinath, paying particular attention to its value in practical application of the discipline and in comparison to other texts in this space. Readers seeking to expand their library and knowledge in public health will find this review valuable. Similarly, the review by Associate Professor Peter Atken of Fast Facts – Eczema and Contact Dermatitis will be valuable to clinicians in both military and veterans’ health practice.

The notable case in this edition of the Journal of Military and Veterans’ Health is provided by Darrell Duncan and co-authors from the Middle East. An out-of-theatre injury, that probably is a story in itself, resulted in a high flow priapism detected and managed on return to operational military service. The investigation and management of this case is a triumph in clinical skill from primary to definitive urological care by deployed military health personnel and a testimony to the level of care able to be focused in support of military operations.

Once again a number of members of the Association have been honoured for their contributions in the fields of military and health service. These achievements are recognised with the details of citation and followed by the recognition of a lifetime (so far) of Reserve military health service by Rear Admiral Graeme Shurtle RANR culminating in his posting as Surgeon General. The Journal also recognises with both sadness and respect the life of Lydia Stevens, an inspiring Czech-Australian whose worthy contributions to Air Force Nursing and Cadets are recalled by her husband, David Stevens.

Finally, having been inspired yourself by the articles in this edition of the Journal of Military and Veterans’ Health, the Instructions to Authors are provided to guide your contributions. For those less certain of the form of your creative contribution, categories of submissions to the Journal are listed within the back page. The Editorial Board are also very pleased to receive direct calls to discuss contributions.

Thank you for your support of our Journal.

Good reading.

Scott Kitchener
Managing Editor
President’s message

As I write this note, a Four Corners program on post-traumatic stress disorder in the ADF has gone to air.

Although not wanting to comment on the detail or veracity of reports as presented, broadcasting of this program does again highlight the importance of mental health to both the active military organisation and its members, and perhaps more importantly its long-term impact on ADF members and veterans. The challenge to the military health community in providing adequate immediate support following psychological trauma clearly remains high, but equally, if not more challenging, is the ability to translate this into long-term care and support where necessary.

The traumas, both physical and psychological, of combat cannot be avoided. We are again reminded of the impact of this during the Anzac Day ceremonies this month. It is beholde upon the Defence and Veterans’ health professional communities to ensure that those who have or will face these situations are able to move through them with a minimum of short-term pain and emerge with their psychological health intact, and where this does not occur, that they are appropriately supported.

AMMA Survey

To assist Council in developing a strategic plan for the Association, a survey seeking information on members’ perceptions of the value of the Association will shortly be distributed. The survey seeks input on the things AMMA does well, the things that it can improve, and things that might be added to the Association’s repertoire to add value to its members. This survey will also be distributed more broadly to the health professional community both as a way to increase the Association’s visibility as well as seeking some input on those aspects that are important in attracting members to our professional organisation.

Council intends to use the information derived from the survey to develop a strategic plan that will be presented to the next AGM in October.

Research Workshop

The Association, through Greg Mahoney at CMVH and Helen Kelsall at Monash University, is in the process of developing a one-day workshop covering topics that are relevant to military and veterans’ health personnel when contemplating or undertaking research, or preparing papers for publication or presentation.

The military and veterans’ health care environments offer unique opportunities for research, given that in many cases there is the ability to track individuals and their health over a long period of time, both through their records and personal contact and follow-up. Unfortunately, many of these opportunities are not taken up because individual health workers do not have the necessary understanding of research techniques and requirements to undertake these activities. This workshop aims to provide members these skills so that opportunities can be seized for the benefit of all.

The first of these workshops, being conducted as a pilot, will be held in Brisbane in August this year. Keep an eye out for further details in relation to the dates, venue and program for this exciting new development.

Conference 2009

I am delighted to confirm that AMMA has gone into partnership with Controversies in Civilian and Military Trauma (CCMT) to conduct a joint conference this year.

The conference will be held over a three-day period from 30 October to 1 November. On the day preceding the conference, CCMT will be holding a workshop on the challenges of evacuation and transport of casualties, with a focus on the military environment. The CCMT stream of the conference will be held on the first two days of the main period, with the AMMA conference continuing for an additional day on the Sunday.

The venue for the conference is the Gold Coast Convention and Exhibition Centre and I am sure that, as always, there will be a wealth of high-quality presentations and great opportunities to share experience and knowledge among delegates.

Please mark these dates in your diary now, and start thinking about putting pen to paper to make a contribution to the proceedings.

Conference 2010

I am equally delighted to be able to report that the Surgeon General Australian Defence Force, Major-General Paul Alexander, has agreed to enter into a partnership with AMMA to hold a joint conference in Canberra in 2010.
While final details of this conference remain in development, it is expected that it will be held at the Canberra Convention Centre at the end of October 2010.

Journal Matters

The development JMVH continues apace. We are slowly attracting an increasing number of papers of high quality, our processes for publication and peer review run smoothly and quickly and the end product has impact.

We recently held the first meeting by teleconference of the Journal’s International Advisory Committee (IAC). The IAC currently has 13 members with representation spread around the world (members are listed on the title page of this edition). The first meeting provided the Editorial Board with a wealth of ideas and information, and these will be used by the Board to further progress the development of the Journal. IAC members showed great interest and commitment in assisting the Association to achieve its strategic aim of making the Journal an internationally recognised publication covering the breadth of military medicine and veterans’ health.

I would like to thank the IAC for their support, and I look forward to further interactions with and advice from them in the future.

Also on the Journal front, I am pleased to be able to advise that the Minister for Veterans’ Affairs, the Honourable Alan Griffin MP, has provided a contribution of $5000 to support the continuing publication of JMVH. On your behalf, I would like to publicly thank the Minister for his support.

The Association continues to go out to various groups seeking ongoing sponsorship so as to ensure that the Journal is able to continue its development and publication in these early formative stages.

Lydia Stevens

It is with sadness that we report the recent passing of Lydia Stevens, who was a member of the AMMA Council during the Association’s formative years. Lydia was well-known and liked throughout the ADF health services, and her contribution both to military medicine and the Association was outstanding.

The eulogy for Lydia that was presented at her funeral service by her husband is published in this issue.

I am sure that you will join with me in passing on our condolences to David Stevens and Lydia’s family on their recent loss.

Finally, may I again remind you of the upcoming joint conference with CCMT, and I look forward to seeing you at the Gold Coast at the end of October.

Russ Schedlich
AMMA President
The CMVH Introduction to Military Medicine Course - Gestation, delivery and postnatal period

Associate Professor Scott Kitchener

Abstract
Tri-service post-graduate vocational education in Medicine has not previously been available in the Australian Defence Force (ADF). *Introduction to Military Medicine* (IMM), originally designed as an introduction to the practice of medicine in the military, ran for the first time in 2008 as an on-line postgraduate course in the Master of Public Health (Defence) program provided by the Centre for Military and Veterans Health.

This paper recommends that the course should be a core component of the MPH (Defence) Program for Medical Officers, rather than an elective; however, greater opportunities to develop IMM exist in blending it into existing programs to train new military Medical Officers to a deployable standard (Competency Level 2). *Introduction to Military Medicine* also supports military clinical supervisors to apprentice new Medical Officers facilitating their passage through civilian vocational training towards becoming competent and confident military and civilian general practitioners. A broader student scope is also recommended to accommodate military medicine training needs for Reserve Force and Civilian Contract Medical Practitioners.

Improvements will now require expansion of the teaching staff and exploration of new delivery methods in closer collaboration with the ADF.

Introduction

Tri-service post-graduate vocational education in Military Medicine has not previously been available in the Australian Defence Force (ADF). An introduction to the practice of medicine in the military was run as an on-line postgraduate course by the Centre for Military and Veterans Health (CMVH) at the University of Queensland in both semesters of 2008. This paper will review the course development, conduct and future.

The Course

*Introduction to Military Medicine* has originally been designed as an elective course in the Master of Public Health (Defence) program provided by the Centre for Military and Veterans Health. It has been constructed by experienced serving members of the ADF, writing and teaching in their area of expertise within Military Medicine. The course aims to provide an introduction to students at the entry level of military medical practice based on the Australian Defence Force model.

The University course (UQ - PUBH7119) is provided online, however, is also provided to the students on CD-ROM to ensure access. The CD includes the learning guide and learning materials, or further readings. The learning guide is a road map to guide the student through important concepts in the field of Military Medicine and is written by those practicing in the course key areas. Important points are illustrated by hyperlinked readings that are divided into required, recommended or reference reading. Readings include definitive reviews, original papers, operational descriptions and personal experiences from international scientific, definitive texts and ADF policy. One of the major logistic tasks in developing the course was to include suitable readings some of which required declassification before inclusion.

The course is modularised. Students are initially introduced to the structure and function of defence (and veterans') health services using comparisons with civilian systems and other Defence health services. The student is guided through the distinctive aspects of defence health services beginning with discussions of leadership and medical administration. Some aspects of specific ADF clinical policy (injury management, fertility and pregnancy management) are used as an illustration of how the clinical approach in the context of military practice, rather than as a discussion of disease processes and their medical care.

Subspecialty areas practiced in the military including occupational and environmental health, aviation medicine, underwater medicine, tropical medicine, chemical, biological and radiation defence and
operational health support are introduced in modules designed to lead into existing specific courses. Ethical issues of military medical practice are examined to stimulate an on-line discussion to ensure the student considers these dilemmas prior to operational exposure. Discussions conducted during the course are a formative assessment. Summative assessment includes multiple short clinical cases, mid-semester, and long cases at the end of semester.

Deciding the teaching method

The teaching method “selected” was determined by a host of internal and external factors, some of which have changed in light of the first two semesters of the course conduct and now partly direct further development.

Many experienced military medical practitioners offered their practical assistance to develop the course. Without these people the course would not have been developed or conducted. They are gratefully acknowledged (Table 1).

Table 1. Contributors to the Introduction to Military Medicine Course

| Wind Commander Rosemary Vandenberg |
| Lieutenant Colonel Isaac Seidl |
| Lieutenant Colonel David Ward |
| Professor Niki Ellis |
| Dr Ian Gardner |
| Squadron Leader David Taplin |
| Captain Andrew Robertson (RANR) |
| Dr Kate Mandalson |
| Wing Commander Leona Down |
| Lieutenant Colonel Peter Leggat |
| Lieutenant Scott Squires (RAN) |
| Dr Michael Naughton |
| GPCAPT Tracy Smart |
| COL Rob Miller |

In practice, external factors most shaped the teaching method. The first years of the service for Medical Officers are crowded with both military and civilian courses and programs. Delivering the course on-line and over two semesters accommodated the need for flexibility within the military training program.

Course review

On review using a well-accepted model for curriculum planning, *Introduction to Military Medicine* is relatively well balanced and integrated, though has some obvious opportunities for further development.

The course is mostly student-centred. A more teacher-centred basis would be possible with a residential component or block delivery. The latter approach was considered less attractive given the crowded training program for new Medical Officers. The course has a balance between problem-based learning and assessment, and information gathering. Information in the form of policy gathered through the course provides a residual effect to learning by establishing a body of reference material on military medical practice.

While the course appears to be modularised and subject based, it actually integrates these topics horizontally in the context of a tri-Service approach and vertically integrates towards veteran’s health. The course specifically addresses the balance of clinical experiences by assisting medical officers in their transition from hospital-based to community-based practice within the military. It is quite prescriptive and could be more elective-based by adding Single Service-specific annexes to modules.

The course is very systematic in delivery. Nevertheless, it was designed to be a teaching framework or recipe for clinical supervisors of new Medical Officers apprenticing in military practice as occurs in the Australian General Practice Training Program.

Did the course meet expectations?

So what did the students think? *Introduction to Military Medicine* was subject to the standard University of Queensland TEVAL (teaching evaluation). As response rates were not high, students and senior military medical officers were informally asked their opinion directly during reviews of the course at the Chapter of Military Medicine meeting, the AMMA Conference and the Asia Pacific Military Medicine Conference.

The Statements of Intent in the *Introduction to Military Medicine* course are in the form of aims and learning objectives. The aims were:

“...to introduce new military medical officers and civilian medical practitioners working in military environments to military medical practice.”

In practice, while the majority of students were
new Medical Officers, some had served for several years and enrolled in the course to determine whether they had developed a rounded education understanding and to gain credit points towards their Masters program. Nursing Officers and a Senior Non-Commissioned Officer Medical Technician also enrolled with the widening of the pre-requisites for students. No civilian medical practitioners working in military practice enrolled, however, negotiations are on-going with contract health practitioner companies to support their staff with professional development utilising this course.

Of the students new to military practice, the overwhelming feedback was that the course did assist in preparing them for their new practice environment. Feedback from senior Medical Officers was also favourable regarding whether the course successfully introduced Medical Officers to military practice.

The learning objectives of the course were:

"After successfully completing this course you should be able to:

1 Describe the elements and objectives of a military health system including under operational conditions.

2 Describe the concepts of fitness within the military, and

3 Understand the application of medical practice within the military environment."

All students to date (n=20) have passed the assessments. Assessments were specifically tied to learning objectives. A marking scheme was produced prior to receipt of assessments and defined in advance the minimum assessment standard. All assessments were marked by a single examiner and subsequently reviewed independently confirming that the course has achieved the learning objectives.

In practice, students and reviewers have indicated that one of the valuable outcomes of the course has been directing the reading and compilation of useful contemporary policy for practicing in the military setting.

The sequencing of topics has been well received by students in completing assignments after working through related subjects. Additionally, comments provided by students in formative assessment regarding military medical ethics, which was placed at the end of the course to allow basic understanding of practice issues, indicate a broad understanding enabling involvement in the discussion.

The emphasis of the course on a tri-Service model has been particularly mentioned as appropriate for the current climate of Defence Health Service practise. Several recommendations were to incorporate more depth into single Service issues within the context of the tri-Service emphasis.

So where does the course fit?

In the MPH (Defence)

On the broader curriculum level, the course is part of the Masters in Public Health (Defence) Program. The course remains an elective in this program. One Defence-specific course (Occupational and Environmental Health, Adelaide University) has now been accepted as a core course in this Program. Biostatistics is another core course in the MPH (Defence), however, it has been less well accepted by Medical Officer students in terms of applicability to their daily practice. Introduction to Military Medicine should be considered to be one of the four core courses, perhaps replacing Biostatistics for Medical Officers (and remaining an elective for other students meeting pre-requisites). In this role the course is more appropriately sequenced in the Masters Program.

ADF training goodness of fit

The Introduction to Military Medicine curriculum has articulated well into other (Australian) Defence specific courses, particularly, Aviation, Underwater, Occupational and Environmental Medicine courses. This has been appreciated in responses from students and coordinators of these courses. Initial training programs for new Medical Officers are crowded, yet there has been prior to this course no tri-Service introduction to practice in the military. For the ADF and other regional Defence health services, the flexibility and breadth of the Introduction to Military Medicine course most suitably addresses the need for an introductory course, as represented by the IMM, to become part of the Competency Level 2 requirements for a deployable Medical Officer. In proposals to facilitate this requirement, it will be necessary to cross-map curricula in order to blend the IMM with existing Single Service requirements as addenda to modules.

To meet the training needs of new Medical Officers in a practical way, other modes of delivery will be required recognising the need for flexibility, proximity and sequencing, and accommodating other military training. The ability to claim University credit will be retained, however, the course will not be primarily delivered for this purpose. After a number of years and a circuitous pathway, this re-aligns the Introduction to Military Medicine back to its initial concept.

Other recommendations from senior health staff have included the incorporation of mental health...
policy and practical examples more into the different modules to match current practice and experience in the ADF. Broader student catchment has also been recommended to expand IMM to meet other training requirements of ADF. These include delivery to Contract Health Practitioners beginning practice with the ADF; delivery to Reserve Medical Officers in a manner suitable for the time commitment available to these members; and consideration of wider availability to other Health Officers.

Discussions regarding the success of non-Medical Officer students lead to the view that another course borrowing content from IMM is a better solution for other Health Officers, leaving IMM to meet the needs of introducing Medical Officers to practice in the military.

The Australian Defence Medical Officer Competency Level (CL) system defines an MO at CL3 as able to deploy in an unsupervised specialist Medical Officer role.

For an ADF MO specialising in primary health care, CL3 is achieved by completing military health courses and training in the Australian General Practice Training (AGPT) Program. The AGPT program includes the award of Fellowship in either the Royal Australian College of General Practice or the Australian College of Rural and Remote Medicine marking attainment of a standard of competent (civilian or military) practice. The AGPT policies, including sections on ADF Registrars, were updated in 2008 and the *Introduction to Military Medicine* course was reviewed against these.

The AGPT policy require that ADF Registrars gain necessary experience to practice competently during and after their military career, but no specific training in military clinical practice is outlined in the policy to achieve this standard. The clear niche for *Introduction to Military Medicine* is to facilitate the transition from civilian hospital practice into military clinical practice by providing an apprenticeship curriculum structure for supervisors to use with new medical officers. Learning guides and materials are available for civilian GP Registrars and their supervisors in the Program. *Introduction to Military Medicine* provides a curriculum map, a learning guide and learning materials for the military practice component for ADF GP Registrars.

Conclusions

*Introduction to Military Medicine* has had a successful if modest debut as a University course in 2008. The place of the course should be reconsidered as one of the core components of the MPH (Defence) Program and expansion of the teaching methods used in delivery of the course should be explored. However, real opportunities to develop IMM exist in blending the course into CL2 programs for direct delivery to meet current training needs for new military Medical Officers and Reserve Medical Officers. Additionally, the course should be considered as a basic training requirement for introducing Civilian Contract Medical Practitioners to Tri-Service military practice. *Introduction to Military Medicine* also supports military clinical supervisors to apprentice new Medical Officers facilitating their passage through civilian vocational training towards becoming competent and confident military and civilian general practitioners.

The IMM course thus appears to have established a place in military medical education. Improvements will now require expansion of the teaching staff and exploration of new delivery methods in closer collaboration with the ADF.

Contact author: Associate Professor Scott Kitchener, Centre for Military and Veterans’ Health, University of Queensland, Herston Campus, Herston Road, Herston, Qld, 4000, Australia

Email: s.kitchener@uq.edu.au

References

Introduction
The aviation and underwater environments both present unique demands on human physiology. Humans are well adapted to live on land, usually at low altitudes. With the invention of self contained underwater breathing apparatus (SCUBA) humans have been exposed to an environment which has significant physical, physiological and psychological effects on the human body. An aeromedical clinician should have a sound knowledge of these effects as aeromedical retrieval of injured divers is relatively common. When victims of SCUBA accidents are transported via aircraft the patient can be exposed to further injury. This article explains the physics and physiology involved in SCUBA diving and discusses the more common diving related problems. The aeromedical transfer of patients suffering from decompression illness (DCI) is discussed with transport recommendations provided. In addition, there are controversies involved in both aviation and underwater medicine. Several of these issues are also discussed.

Definitions
Decompression illness (DCI)
The term decompression illness (DCI) refers to a group of conditions which may arise when there is a reduction in ambient pressure on the body\(^2\). This can occur when an aviator travels to altitude - either in an aircraft or a decompression chamber. However, it more commonly arises following a SCUBA dive to depth\(^3\). DCI comprises decompression sickness (DCS), which is caused by the formation of bubbles of inert gas (nitrogen) within body tissues, and arterial gas embolism (AGE) which occurs with the entry of gas into the arterial circulation. AGE may occur either as the result of pulmonary barotrauma (PBT)\(^4\), or when the venous bubble load exceeds the ability of the pulmonary vascular bed to act as a filter of evolved gas\(^5,6\). Alternatively AGE may occur when venous gas bubbles move directly from the venous to the arterial circulation via a right to left shunt, such as occurs with a patent foramen ovale (PFO)\(^6,7,8,9\). Cerebral arterial gas embolism (CAGE) is the most serious form of AGE. Sub-atmospheric DCI is that group of illnesses that may arise during or following exposure to sub-atmospheric pressure, as may occur during flight and within a hypobaric chamber\(^4\).

References
3. The Keeper: Had you such leisure in the time of death to gaze upon these secrets of the deep?
William Shakespeare - *King Richard III*.

Clarence: Methought I saw a thousand fearful wrecks; a thousand men that fishes gnawed upon; wedges of gold, great anchors, heaps of pearl, inestimable stones, unvalued jewels, all scattered in the bottom of the sea. Some lay in dead men’s skulls; and in the holes where eyes did once inhabit there were crept, as ’twere in scorn of eyes, reflecting gems, that woold the slimy bottom of the deep, and mocked the dead bones that lay scatter’d by.

Figure 1. Bubble-contrast injection during Valsalva manoeuvre. The “flap” of the foramen ovale is opened and bubbles are seen crossing from the right atrium to the left atrium (arrow) - the same phenomenon occurs in DCI, permitting VGE to enter the arterial circulation.
http://www.emedicine.com/ped/topic2494.htm#section-pictures

Decompression sickness (DCS)
Decompression sickness (DCS) is a multi-system condition arising from the evolution of gas molecules that are normally dissolved in tissues\(^10\). The principle component of these bubbles is the physiologically inert gas nitrogen. Nitrogen bubble formation usually...
occurs as a result of inadequate elimination of dissolved inert gas during the ascent from a SCUBA dive\textsuperscript{4,5,11}. Venous bubbles may form de novo or result from the intravascular release of tissue bubbles\textsuperscript{5}. When the venous gas emboli reach the lungs they are usually filtered at arteriole level. However, if the pulmonary arterial pressure (PAP) rises - which is usual after SCUBA use – the bubbles may pass into the arterial circulation\textsuperscript{6}. These bubbles then travel to vital organs such as the nervous system and lodge in arterioles and capillary beds, leading to the development of DCS symptoms. Bubbles can also arise spontaneously in tissues, and these are called autochthonous bubbles. Autochthonous bubbles are more likely to form in tissues with high gas content and poor perfusion (such as spinal cord white matter, adipose tissue and periarticular tissue)\textsuperscript{5}. DCS may also present with constitutional symptoms including headache, fatigue, malaise, anorexia and pain which is poorly localised\textsuperscript{10}.

**Pulmonary barotrauma (PBT)**

Pulmonary barotrauma (PBT) occurs during SCUBA diving when expanding gas in the alveoli is unable to escape through the airways\textsuperscript{11,12}. When a SCUBA diver who has been breathing compressed gas at depth ascends, the gas within the lungs must be allowed to escape. If the diver fails to exhale, or if there are local pockets of trapped gas in cysts or bullae, the trapped volume of air will expand in accordance with Boyle’s Law. This leads to tearing of the lung parenchyma and egress of air into either the:

- Pulmonary venous system;
- Perivascular sheaths, causing mediastinal emphysema; or the
- Pleural cavity, causing pneumothorax\textsuperscript{4,11}.

PBT is thought to be more likely to occur between adjacent expanding areas of the lung which have non-heterogenous compliance\textsuperscript{6,13,14}. Pulmonary barotrauma is most likely to occur close to the surface, as the greatest rate of pressure change occurs in this zone\textsuperscript{12}. PBT has been reported following use of SCUBA at depths as little as 1 metre of sea water (1 msw)\textsuperscript{4}.

**Arterial gas embolism (AGE)**

Arterial gas embolism arises following PBT. The gas which enters the pulmonary veins is rapidly returned to the left side of the heart and then redistributed according to buoyancy around the body – most commonly into one of the middle cerebral arteries\textsuperscript{6}. AGE most commonly gives rise to neurological symptoms, with a range of reported symptoms including:

- Subtle alterations of higher level functioning;
- Motor and sensory abnormalities;
- Paralysis;
- Seizures;
- Unconsciousness; and
- Death\textsuperscript{4}.

The injury pattern from AGE is typically triphasic, with a sequence of:

1. Temporary neurological dysfunction, followed by
2. A period of recovery; then
3. Further deterioration due to emboli occlusion of vessels, endothelial extravasation, platelet activation, coagulopathy and brain lipid peroxidation\textsuperscript{6}.

Studies of cerebral artery air emboli (CAAE) have shown that injury severity and the rate of bubble absorption is proportional to the bubble size – with microscopic bubbles taking shorter times to be absorbed than macroscopic bubbles\textsuperscript{15}.

**Figure 2. Fatal arterial gas embolism in a diver who was brought to the surface after running out of air at 200 feet of sea water. Black arrows mark air casts of the aorta, axillary, carotid arteries and left ventricular outflow tract.**

From: Barratt: Neurologist, Volume 8(3). May 2002.186-202

**Historical considerations**

**Bert and Haldane**

Paul Bert and J.S. Haldane are considered the fathers of diving medicine. Bert showed that DCS was due to the formation of gas bubbles in the body. Further he suggested that DCS could be averted if the diver rose to the surface gradually. He also demonstrated that the pain from DCS could be relieved by a return to depth. Haldane made the observation that a diver could be recovered from depth, provided he stopped in stages to allow absorbed nitrogen to pass out of the body. Haldane developed the first dive tables\textsuperscript{5}. 
Decompression sickness history

Robert Boyle exposed experimental animals to the effects of hyperbaric and hypobaric conditions, and produced the first description of DCS in 1670, from observations of a viper subjected to hypobaric pressure\(^5\). During the 17th century in England, the first pressure vessels large enough to hold people were constructed. Air was pumped into these vessels and they were strong enough to hold air under pressure. Patients with a variety of disparate medical conditions were “treated” in these chambers. With the development of caissons in bridge construction, caisson disease or the “bends” was described. The bridge workers were working in the air filled caissons at depths of up to 70 feet (or four Atmospheres Absolute - ATA). The workers developed joint pain due to nucleation of dissolved nitrogen in their joints\(^16\). The death rate from DCS incurred during caisson work was high, and it was Moir in 1896, who developed recompression treatment - effectively reducing the fatality rate from 25% to 2\(^%\).

In 1921 Dr Orville Cunningham built a multi-place hyperbaric chamber which was 64 feet in diameter. This chamber contained compressed ambient air at pressures up to 50 psi above atmospheric pressure. Patients were placed inside for up to seven days (including a two day recompression schedule). The chamber was used to treat a variety of diseases which were thought due to an unknown anaerobic organism. One condition specifically mentioned was “post-menopausal arthritis”\(^16,17,18\).

During World War II there was intensive research into both aviation and diving medicine. This research probed the boundaries of human endurance in high-altitude flight and deep sea diving. Military involvement in aviation and diving medicine remains strong to this day\(^19,20,21\).

Physics, physiology and pathology

Decompression sickness

Henry's law states that the concentration of a gas in solution is proportional to the partial pressure of that gas at the gas – solution interface. Breathing gases in SCUBA diving are compressed to pressures equal to the surrounding water pressure, and therefore the partial pressure of gases in the mixture increase. Tissues take up oxygen and nitrogen at elevated partial pressures, and if these partial pressures are high enough the diver can experience oxygen toxicity or nitrogen narcosis. Nitrogen is absorbed at differing rates by tissues depending on local blood supply and the solubility of the gas in those particular tissues. Some tissues are described as “fast” tissues, permitting faster absorption of nitrogen in them and examples include renal tissues and grey matter. “Slow” tissues take up nitrogen at a slower rate, and examples include cartilage and fat. The longer a SCUBA diver spends at depth the greater the amount of nitrogen that will be dissolved in their body tissues. Given sufficient time, some tissues will be fully saturated\(^8,10,11,12,17\).

Upon ascent this process of gas uptake is reversed. In an ideal situation, dissolved nitrogen will remain in solution, as it travels down a concentration gradient to the lung, where it is exhaled as gaseous nitrogen. In reality, this is rarely achieved, with nitrogen bubbles being formed almost routinely upon ascent, especially in “slow” fat containing tissue and within the venous circulation\(^8,10\). Doppler studies have demonstrated that venous gas emboli are frequently found in SCUBA divers\(^8,14\). Usually the nitrogen bubbles remain “silent”, and the dive concludes without any reported symptoms. The greater the bubble load, the more likely the diver will become symptomatic. The venous gas emboli (VGE) are usually filtered out by the pulmonary vasculature, at the arteriolar level\(^6,8\). The presence of a PFO, atrial septal defect (ASD) or pulmonary arteriovenous fistula all increase the likelihood of VGE entering the arterial circulation\(^12,22\). The incidence of PFO has been reported as between 27 to 30% in the normal population\(^16\). The presence of a PFO increases the risk of a diver developing DCS for a given dive profile by a factor of 2.5\(^23\).

The pathophysiology of the clinical presentation of DCS is explained by considering the initial effects of bubbles, whereby they cause mass effect in tissues such as articular cartilage (joints) and nervous tissue (such as the spinal cord). The bubbles obstruct venous outflow and occlude arteries, as well as causing direct injury to the vascular endothelium during their transit. In addition, bubbles cause secondary biochemical effects, including activation of platelets, complement, leucocytes and the clotting cascade.
Vascular permeability is commonly disturbed leading to haemoconcentration, disturbance of microvascular flow and a breakdown in the blood brain barrier\textsuperscript{4,8,11}. DCI was classically divided into Type I (non-serious/pain only) involving limbs or joints, itch, skin rash and localised swelling, and Type II (serious) involving the CNS, inner ear, lungs and heart. DCI is now described based on the clinical manifestations of the disease\textsuperscript{2,5,24-26}. The classification describes DCI in terms of:

1. Acute or chronic;
2. Evolution of symptoms and signs (eg static, progressive, relapsing, spontaneously resolving);
3. Organ system(s) involved (eg neurological, musculoskeletal, skin, respiratory); and
4. Whether there is any evidence of barotrauma\textsuperscript{2}.

Arterial gas embolism

Arterial gas embolism can occur:

1. During heavy VGE loading - when the lung filter cannot absorb the nitrogen bubble load;
2. When there is a right to left cardiac shunt; and
3. When there has been pulmonary barotrauma.

Boyle’s Law describes the inverse relationship between gas volume and pressure. A SCUBA diver with a lung volume of 6 litres at ten metres depth (10 msw) will have air within his lungs at 2 atmospheres pressure (2 ATA). If he ascends to the surface without exhaling, there will now be just 1 ATA, consequently causing a doubling of volume to 12 litres. As this is not possible the diver will suffer from pulmonary barotrauma. Therefore exhalation must occur as the diver ascends to prevent rupture of lung tissue\textsuperscript{4}.

When the lungs are fully distended the alveolar pressure is 50cm H2O above ambient pressure. Experiments conducted on fresh human cadaver lungs in the 1960’s showed that transpulmonary pressure differentials of 80 to 110 cm H2O were sufficient to tear lung parenchyma\textsuperscript{4}. When lung tissue is subjected to dynamic changes during pressure flux, adjacent areas of lung with non-heterogenous compliance may be sites of lung disruption. The type of pulmonary lesion that typically underlies AGE has not been identified\textsuperscript{6}.

Arterial bubbles rapidly distribute according to buoyancy and usually pass to the cerebral circulation, affecting the middle cerebral and vertebrobasilar arteries\textsuperscript{11}. Whilst VGE are usually trapped and resorbed in the lungs, arterial emboli pass through the cerebral circulation fairly rapidly, with over 80% of emboli passing from the arterial to the venous side of the brain within several cardiac cycles.
cycles\(^6\). The reason for this is the higher systolic pressure found in the systemic circulation when compared to the pulmonary circulation. In addition, the venous end of cerebral capillaries is almost twice the diameter of the arterial end (9 versus 5 microns), and the bubbles are thought to be “sucked” through the capillaries into the veins. Whilst the bubbles are transiting the cerebral circulation, they cause endothelial injury via the mechanisms previously listed. This results in neurological symptoms during the next four to five hours, despite the bubble having passed. The bubbles will remain in the cerebral circulation for a much longer interval if the CAGE victim has concurrent hypotension\(^6\). Treatment of hypotension should be aggressively managed to minimise the duration of symptoms, and to decrease the risk of permanent neurological dysfunction.

## Treatment of DCI
### Emergency treatment

The treatment of DCS and AGE has converged in recent years\(^6\). DCI should be suspected whenever a diver experiences pain or neurological symptoms following a dive\(^2,11,12,30\). DCI can occur even following very short dives and occurrence commonly occurs despite dive tables being followed – the so called “un deserved DCI”\(^11\). The principles of emergency treatment are:

- Rescue;
- Resuscitation;
- Supine posture;
- 100% oxygen; and
- Fluid loading\(^2,4,6,11\).

![Figure 6. U.S.Navy Treatment Table 6 is the most common treatment for sport divers with DCI. Extensions, or additional oxygen breathing periods, can be added at 60 and 30 feet of sea water as needed. From Barratt: Neurologist, Volume 8(3). May 2002. 186-202.](image)

### Decompression therapy and adjunctive therapy

Recompression in a recompression chamber (RCC), of proven or suspected DCI is the definitive treatment, and the sooner recompression is begun the better the prognosis\(^4\). Divers who have had transient symptoms consistent with AGE or Type II DCI should undergo recompression to wash out any nitrogen bubbles that may remain in so-called “silent areas”\(^8\). The usual protocol is US Navy Table 6, which initially takes DCI victims to 18 msw (2.8 ATA) and lasts for 4 hours 45 minutes\(^34\). Oxygen is provided at a concentration of 100% for 25 minute intervals, with 5 minute spells on air mix. This helps to minimise the risk of oxygen toxicity\(^4\).

The goals of recompression are to compress bubbles, facilitate bubble resorption and increase oxygen delivery to the tissues\(^1\). The value of hyperbaric oxygen therapy in AGE and DCS is that any intravascular bubbles causing obstruction will be made smaller in accordance with Boyle's Law. The bubbles will move to smaller vessels, or pass into the venous circulation. This minimises the extravascular tissue damage and decreases the endothelial reaction from the presence of the bubble. Hyperbaric oxygen at 2,250mmHg (300kPa or 3ATA) improves the arterial oxygen tension (PaO2) to 2,025 mmHg (270 kPa) and tissue PO2 to 398 mmHg (53 kPa). This greatly increases cellular oxygen supply\(^35\). Hyperbaric pressure tends to collapse the bubble when it adds to the existing collapsing pressures exerted by bubble surface tension and tissue forces. Once these pressures overcome the sum of the partial pressures of the bubble gases (N2, O2, CO2, and H2O), the bubble will collapse and return to solution\(^10\).

Many adjuncts to recompression have been trialled including corticosteroids, anticoagulants, anti-
inflammatory agents and diazepam. None of these have proved directly beneficial for DCI treatment although diazepam was found useful in preventing and controlling oxygen convulsions. Intravenous lignocaine infusions have been trialled in combination with hyperbaric oxygen therapy (HBOT) and several case reports have shown dramatic improvements in refractory DCI recompressions.

Figure 7. The Cowan dual chamber Transportable Recompression Chamber System (TRCS). The module is approved for flight in RAAF C-130 airframes. The unit is loaded either by using the wheels or via forklift. The Unit has a transfer lock and a recompression chamber.

Photo - Cowan Manufacturing, Australia.

Aeromedical considerations

DCI and the physical stressors of flight

Divers and subjects who have been in sub-atmospheric hypobaric chambers may develop symptoms and signs of DCI for the first time when exposed to the hypobaric conditions of flight. Commercial flight typically provides ambient cabin pressures of 6,000 to 8,000 feet. Following SCUBA use, divers are generally advised to avoid air travel for a minimum of 24, and preferably 48 hours following any dive requiring decompression stops. Dive computers can also calculate the no-flying interval; and these devices may compute shorter time intervals again. Exposure to sub-atmospheric ambient pressures may precipitate bubble formation and the first symptoms of DCI can occur when the diver is remote from medical assistance. Thus whenever possible, transfer of DCI victims should be conducted in aircraft that can maintain sea level cabin pressures.

The barometric pressure at MSL is 760mmHg, and this falls to 565mmHg at 8,000 feet. This results in a reduction of PaO2 from 95 to 56 mm Hg. DCI victims being transported at altitude will have decreased oxygen gradients to sustain marginally hypoxic tissues. An interesting corollary of decreasing ambient pressure, is that there will then be a relatively increased gradient to assist in eliminating retained nitrogen. Any benefit from this would be overshadowed by the heightened risk of further nitrogen bubble formation.

DCI and the psychological stressors of flight

Air transportation is an unpleasant experience for many passengers and patients. The neuropsychological changes found in some DCI victims may be compounded by the aeromedical transfer. An explanation of the expected stressors of flight, and ongoing reassurance minimises this discomfort.

Aeromedical airframes – some considerations

Short haul aeromedical transfer (including rotary wing)

If required, primary transfer (forward AME) of a DCI victim can be undertaken. Usually this will be performed by light aircraft and helicopters. The maintenance of a sea level cabin may be problematic in light aircraft, and is usually not possible in helicopters (the Bell 222 and the Bell/Agusta BA609 tiltrotor being two exceptions to this). Vibration is pronounced in rotary wing airframes, and access to the patient is limited. Helicopter flights, at low altitude
(below 500 feet), are hazardous, especially when there are human factors influencing the flight-making decisions. Aeromedical helicopter transfers have a poor accident record. The requirement to conduct the mission at low altitude will only add to the risk of accident. The urgency of the transfer can be better assessed if the desk officer (aeromedical evacuation organising officer) organising the aeromedical transfer discusses the clinical scenario with the destination recompression chamber facility. Patients in remote locations with significant DCI symptoms require urgent transportation to a recompression chamber (RCC). Their movement priority will justify transportation in suboptimal aircraft.

Long haul (strategic) aeromedical transfer

Once a DCI victim has reached a RCC there is little indication to transport him further unless there are concurrent injuries. Further movement of the patient would not be considered appropriate unless there were over-riding clinical needs that could not be addressed at that RCC. Aeromedical transfer of a DCI victim requires a sea-level cabin pressure. Many aircraft are unable to provide this option.

Fuel, range and altitude penalties

Aircraft maintaining sea-level cabins will use significantly larger amounts of fuel for the same distance travelled. The aircraft will have a lower than usual flight ceiling imposed by the sea-level cabin pressure. The maintenance of sea-level cabin pressure causes additional strain on the fuselage. In addition, the compressors will be unable to maintain high differential cabin pressures above this ceiling. Typical fuel penalties are in the vicinity of 30% additional fuel use, which in turn, limits take-off cargo limits, range and speed. Typical ceilings for a C-130J are in the range of 16,000 to 18,000 feet (when a sea-level cabin is maintained). Flight at lower altitudes is not only less economical, it is slower and there will be more turbulence. An integral part of monitoring a DCI patient in-flight is to also monitor the cabin pressure. The cabin pressure should be checked at regular intervals and recorded on the patient observation record.

Recompression in-flight

There are a variety of monoplace and twin chamber recompression chambers available. They are expensive and heavy. They are usually only maintained by specialist providers such as offshore oil platforms and navies. The chambers require special aircraft loading devices and must be soundly secured. Aircraft would require a prior rating approval by aircraft engineering licensing authorities. Chambers are able to placed in helicopters and large fixed wing airframes. Monitoring of patients in chambers is problematic in flight. Access is very difficult in twin chambers, and obviously impossible in a mono-chamber without decompressing the patient.

Air travel post DCI

There is considerable variation in the advice given to DCI victims post RCC treatment. Studies have shown an increased rate of developing DCI with altitude provocation post-diving, and the risk is higher with reduced pre-flight surface intervals. A study by Barnes, Bryson and Dowse revealed that advice provided by RCC facilities to treated DCI patients on the minimum pre-flight interval varied between 72 hours and six weeks. It would be prudent to wait at least two weeks before undertaking a commercial flight after successful DCI treatment. In more severe
cases a longer interval may be justified. The Australian Defence Force (ADF) recommends that individuals with musculoskeletal pain only DCI should not fly as passengers or aircrew for a minimum of 72 hours following complete resolution of symptoms\(^2\). Patients with more severe DCI have their aeromedical disposition confirmed by consultation. With such a wide range in recommendations, a scientifically based standard policy is required following proper trials.

**Controversies in hyperbaric medicine and aeromedical retrieval**

DCI occurrence when using tables correctly

The aeromedical desk officer should be aware that DCI may occur in divers even when they are diving within the accepted dive tables\(^4\)\(^2\). Any symptoms that occur upon surfacing from a dive should be considered as possibly being DCI. The occurrence of DCI in divers following tables is commonly termed “undeserved” DCI\(^1\)\(^1\).

The use of helicopters for aeromedical retrieval of DCI victims

Although helicopters pose a theoretical risk of exacerbating DCI by altitude and vibration exposure, it is essential that a diver with DCI reach a recompression facility. The time to reach decompression influences the prognosis of a diver with DCI. Therefore the risks of helicopter retrieval must be balanced against the gains of recompression and in some cases road transportation may be the most appropriate retrieval method if the case is less urgent.

The need for RCC treatment in patients who have recovered spontaneously from DCI

Many patients will recover from DCI symptoms with oxygen treatment only. There have been studies which show that neurological injury may coexist with DCI that appears to be musculoskeletal only\(^4\)\(^3\). The aeromedical desk officer should not decline a request for aeromedical transfer, with justification that the patient has recovered on oxygen alone. Apart from occult bubbles which are yet to declare with symptoms, there may well be delayed onset (third phase) symptoms from CAGE several hours post event.

**Presentation times, delays and aeromedical transfer**

Divers often present days after their DCI symptoms have appeared. Even with lengthy delays of up to two weeks there are still proven benefits from recompression therapy being instituted\(^4\)\(^2\). After lengthy delays, most bubbles will have resorbed, however residual symptoms from inflammation have been proven to respond to recompression. Aeromedical transfer to an RCC facility therefore remains a valid request.

**Conclusion**

Aeromedical retrieval of DCI victims is not an uncommon request for any aeromedical provider. Physicians involved in transferring DCI patients should have a sound knowledge of underwater medicine as well as a thorough appreciation of the stressors of flight. By combining expertise in these two areas aeromedical physicians will be able to transfer DCI victims more safely and efficiently.

**Disclaimer**

The views, opinions, and/or findings in this report are those of the author and should not be construed as an official policy of the Royal Australian Air Force or the Australian Defence Force.

**Contact author:** Jeffrey C Stephenson OAM MBBS MAvMed DipAeroRet, Squadron Leader (RAAFSR), Director of Medical Services, Senior Medical Officer, 3 Combat Support Hospital, RAAF Richmond, NSW, 2755 Australia

Email: Jeff.Stephenson@defence.gov.au
References


24. RAAF Institute of Aviation Medicine, Aviation Medical Officer Course 2006.


42. Emerson GM. (2002). What you need to know about diving medicine but won't find in a textbook. Emergency Medicine 14:371–376. Ovid Full Text

Bibliographic links
Norovirus outbreak in Australian Army personnel visiting Brisbane, Queensland, February 2007

Abstract

In February 2007, there was an outbreak of gastroenteritis in a group of Townsville-based Australian Regular Army personnel visiting Gallipoli Barracks in Brisbane, Queensland. Of the 23 patients hospitalised, the majority presented with fevers, vomiting, abdominal cramps and diarrhea. One patient’s presentation mimicked acute appendicitis and he underwent appendicectomy. Stool specimens were negative for parasitic and bacterial pathogens; however, two of the later cases were confirmed as having Norovirus infection. The characteristics of the remaining cases were consistent with Norovirus infection. To our knowledge this is the first reported Norovirus outbreak in Australian Defence Force (ADF) personnel.

Background

Noroviruses are an important cause of epidemic gastroenteritis in both children and adults, particularly in settings such as refugee camps and natural disasters that are characterised by overcrowding and poor sanitation. Outbreaks have been reported in passenger cruise ships, nursing homes and youth summer camps in the United States of America (US). Norovirus infection is thought to have been a major cause of morbidity amongst the 240,000 people evacuated from Louisiana to Texas following Hurricane Katrina in September 2005. It is thought that around 90% of all epidemics of non-bacterial gastroenteritis in the US are caused by Noroviruses.

Amongst military populations, Norovirus outbreaks have been described in forces from the US, Israel, the Netherlands and the United Kingdom in both maritime and land theatres of operations, as well as in military training establishments. Attack rates of up to 25% were reported in one study. Although the clinical manifestations are usually self-limited within 48 hours for affected individuals, a Norovirus outbreak can impact significantly on the operational effectiveness of military forces.

We were unable to identify any previous reports in the medical literature of Norovirus outbreaks amongst ADF personnel. There was a later Norovirus outbreak reported in the news media in March 2007 at a Royal Australian Air Force (RAAF) base in Adelaide, South Australia.

Case Report

Chronology. In early February 2007 members of an Australian Regular Army infantry company travelled by commercial airlines from Townsville to Brisbane to conduct training at Gallipoli Barracks. During the flight, a soldier was noted to be unwell with vomiting. That evening a 25-year-old male presented to Gallipoli Barracks Health Centre and, following assessment by a general medical practitioner, he was admitted to the ward for observation and rehydration. On the following day, nine members of the same unit presented with various combinations of vomiting, diarrhea, abdominal discomfort and fever. Anecdotally it was reported that most of these cases had been seated near the index case on the aircraft. Seating on the aircraft had been allocated in alphabetical order, and the surnames of eight of these nine early cases were clustered between the letters H and O. Although suggestive, it is unclear whether this seating pattern contributed to the early transmission of the illness.

Further cases were admitted over the next week, with the final admission of a member of this group presenting with vomiting 14 days after admission of the index case. The chronology of case presentations appeared to suggest an infectious cause with a relatively short incubation period (see Figure 1). In total, 23 members of the group were admitted with presumed infectious gastroenteritis. Anecdotal reports from patients admitted to the ward suggested that, within the visiting group, there were additional cases...
who chose to self-manage their symptoms within the barracks accommodation and did not seek medical attention.

**Clinical Features.** All cases in the group were male. The average age of patients was 25 years, with a range from 19 to 43 years of age. Most of the 23 cases were characterised by vomiting, fever and/or non-bloody diarrhoea. One case had prominent arthralgia and another had cervical lymphadenopathy. These features are summarised in Table 1.

<table>
<thead>
<tr>
<th>Clinical Features</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vomiting</td>
<td>19 (83)</td>
</tr>
<tr>
<td>Fever</td>
<td>17 (74)</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>16 (70)</td>
</tr>
<tr>
<td>Severe abdominal pain</td>
<td>1 (4)</td>
</tr>
<tr>
<td>Lymphadenopathy</td>
<td>1 (4)</td>
</tr>
<tr>
<td>Arthralgia</td>
<td>1 (4)</td>
</tr>
</tbody>
</table>

Table 1. Clinical Features.

One soldier from the visiting group, a 19-year-old male, presented with severe abdominal pain associated with moderate neutrophilia (total white cell count [WCC] 14.9; neutrophil count 13.4 x 10⁹/L). He was referred for surgical assessment and later underwent appendicectomy. Histology showed a non-inflamed appendix with no evidence of malignancy. This case was later included in the group of presumed cases of infectious gastroenteritis.

Treatment of the other 22 cases was symptomatic, with antipyretic and antiemetic medications as well as oral and, in some cases, intravenous rehydration fluids. The mean length of hospital stay was 1.3 nights. The most consistent clinical feature was the prompt resolution of symptoms within 48 hours of admission.

**Laboratory Findings.** Stool examination for ova, cysts and parasites with culture for bacterial pathogens was negative in four of four specimens. Later specimens were also tested for enteric viruses; none was positive for Rotavirus or Adenovirus. Both of two stool specimens collected from cases presenting later in the outbreak (the 18th and 22nd of 23 cases admitted) tested positive by PCR for Norovirus. Serological testing for Norovirus was not available.

Haematology results are summarised in Table 2. Mild lymphopenia was seen in eight of nine patients who had haematology testing performed, with lymphocyte counts ranging between 0.5 and 1.2 (normal range [NR] 1.5 to 4.0 x 10⁹/L). Two of these eight patients had mild to moderate neutrophilia of 8.5 and 13.4, while one had a mild eosinophilia. Total WCC was elevated only in the patient who underwent appendicectomy. One patient was noted to have a mild anaemia, with a haemoglobin level of 128 at presentation, which had normalised five days later to a level of 150 g/L. Other haematological parameters were within normal limits, and there were no significant biochemical abnormalities.

**Public Health Considerations.** On the second day of the outbreak, technicians from the local Army environmental health platoon conducted an investigation aiming to identify the cause of the outbreak. It was considered likely that the responsible pathogen had been spread onboard the commercial aircraft prior to arrival in Brisbane. It was assessed as unlikely that a food-borne pathogen was responsible. There were no secondary cases of gastroenteritis identified among hospital visitors and staff.

<table>
<thead>
<tr>
<th>Laboratory Findings</th>
<th>Observed values</th>
<th>Normal range</th>
<th>Units</th>
<th>n (%) observed outside NR</th>
</tr>
</thead>
<tbody>
<tr>
<td>White cell count</td>
<td>5.9 – 14.9</td>
<td>4.0 – 11.0</td>
<td>x 10⁹/L</td>
<td>1 (11)</td>
</tr>
<tr>
<td>Neutrophils</td>
<td>2.8 – 13.4</td>
<td>2.0 – 7.5</td>
<td>x 10⁹/L</td>
<td>2 (22)</td>
</tr>
<tr>
<td>Lymphocytes</td>
<td>0.5 – 2.2</td>
<td>1.5 – 4.0</td>
<td>x 10⁹/L</td>
<td>8 (89)</td>
</tr>
<tr>
<td>Eosinophils</td>
<td>0.0 – 0.5</td>
<td>0.0 – 0.4</td>
<td>x 10⁹/L</td>
<td>1 (11)</td>
</tr>
<tr>
<td>Haemoglobin</td>
<td>128 – 152</td>
<td>130 – 180</td>
<td>g/L</td>
<td>1 (11)</td>
</tr>
</tbody>
</table>

n=9

Table 2. Laboratory Findings.
Following receipt of positive Norovirus results two weeks later, the Brisbane North regional public health unit was notified. No cases of Norovirus infection had been reported in the local civilian population at that time. It should be noted that Norovirus infection is not a notifiable condition in Australia, so infection of civilian occupants of the aircraft cannot be excluded.

Pathophysiology of Norovirus Infection

Noroviruses – also known as Norwalk-like viruses (NLV) – were first described in 1972, and are classified as caliciviruses. At a diameter of 27-32 nm, they are among the smallest of all viruses. Although not enveloped, they exhibit icosahedral symmetry on immune electron microscopy (see Figure 2). Norovirus particles consist of multiple copies of a single structural protein as well as a single-stranded RNA genome. The viral genome was characterised in 1990, allowing the development of better diagnostic tools such as reverse transcriptase polymerase chain reaction (PCR).

The cellular site of Norovirus replication has not yet been identified. Histological changes are seen in the proximal small intestine, with villus shortening, crypt hyperplasia and infiltration of the lamina propria with polymorphonuclear and mononuclear cells. No changes have been described in the stomach or colon.

Norovirus infection is characterised by sudden onset of abdominal cramps, nausea, vomiting and non-bloody diarrhoea. Fever is present in about half of cases. Headache, myalgia and abdominal pain are common. The incubation period is 18-72 hours and the illness is usually mild and self-limiting, lasting between one and two days. Asymptomatic viral shedding may persist in faeces for one to two weeks thereafter.

Laboratory tests are of limited value. The white blood cell count is usually normal; rarely there is leukocytosis with relative lymphopenia. Faecal microscopy shows few if any red and white blood cells. Norovirus has never been successfully cultured in vitro or in non-primate animal models. Norovirus antibodies are found in over 80% of adults in both developed and developing countries, although these antibodies do not appear to confer long-term protection against illness following further viral challenge. The diagnosis may be confirmed using PCR detection of Norovirus in faeces.

Discussion

To our knowledge this is the first reported Norovirus outbreak in ADF personnel. Although Norovirus infection was confirmed in only two cases from this group, the chronology, clinical features and laboratory findings were considered consistent with Norovirus infection being the causative agent in the remaining cases. The size of the visiting group is unknown, which precludes calculation of an attack rate for this outbreak. We were unable to identify any previous reports of Norovirus infection mimicking acute appendicitis.

The two positive Norovirus results described in this case report only became available two weeks after the patients had recovered from their illness. Thus the test was useful in making a diagnosis in retrospect, rather than being a clinically useful diagnostic tool. US forces have deployed Norovirus PCR testing into the field environment, in order to provide rapid diagnostic testing that can be more clinically useful. PCR can also be used to identify Noroviruses by genotype and strain, which may be useful for epidemiological purposes and for monitoring the spread of outbreaks.

ADF health facilities have a low threshold for admitting unwell military personnel who are living in barracks accommodation. This is partly to ensure that there is a level of supervision and care for the affected individuals, and partly to reduce the spread of infectious disease among personnel living in close quarters. This group of visiting personnel was living in basic transit accommodation, with up to eight soldiers sharing a room. These living conditions may have contributed to the spread of Norovirus, particularly to those cases that presented after the first few days of the outbreak.
It can often be challenging to identify the aetiologic agent in outbreaks of epidemic gastroenteritis. Analyses of a large series of cases have typically identified a pathogen in only half of these cases, with the majority of the remainder being attributed to unidentified viral pathogens and toxins. Although laboratory examination of stool specimens for parasitic and bacterial infection is readily available, access to PCR detection of enteric viral pathogens is more limited, and results are often only of public health importance. At the time of the outbreak, the state reference laboratory operated by Queensland Health was the only provider of Norovirus PCR testing in Queensland. Because of the difficulty in confirming the diagnosis, it is likely that Norovirus infection is a common but greatly under-reported cause of epidemic gastroenteritis.

Even with the implementation of standard precautions against bodily fluid exposure, hospital staff are at significant risk of becoming casualties in a Norovirus outbreak. Noroviruses are highly contagious because of their low infectious dose (less than 100 virus particles), prolonged asymptomatic shedding (up to two weeks after clinical recovery), stability with freezing and with heating to 60 degrees Celsius, and ability to resist chlorination (10 ppm chlorine), acid (pH level of 2.7), ether, ethanol and detergent-based cleaners. Nosocomial transmission has been reported in both military and civilian hospitals, resulting in some cases in the temporary closure of health facilities.

The US Centers for Disease Control and Prevention (CDC) advise the use of standard precautions with careful attention to hand hygiene practices when caring for patients with suspected Norovirus infection. Hard non-porous environmental surfaces should be disinfected with chlorine bleach at a minimum concentration of 1,000 ppm, and for heavily soiled surfaces up to 5,000 ppm. Phenolic-based disinfectants at usual concentrations have only limited activity against Noroviruses. Because Norovirus particles are not enveloped, most quaternary ammonium compounds have no significant disinfectant activity against them.

In 2007 a group of researchers announced plans for a phase 1 clinical trial in humans of an investigational Norovirus vaccine, which is delivered intra-nasally in powdered form. If found to be efficacious and safe, vaccination may offer some protection for groups identified as being at high risk of Norovirus infection, such as healthcare workers and military personnel.

Conclusion

This case series adds to the literature of Norovirus outbreaks amongst military personnel. Most of the 23 cases described exhibited clinical manifestations typical of Norovirus infection, with the exception of the case that mimicked acute appendicitis.

There is potential for larger outbreaks of Norovirus amongst ADF personnel, which may limit their operational effectiveness. There remain significant challenges in the early detection and containment of outbreaks, particularly in deployed environments.

Acknowledgement

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Authors affiliation: 1. Deputy Director Medical Services, Redcliffe Hospital, Anzac Avenue, QLD 4020, Australia
2. General Practitioner, Telegraph Road Clinic, Telegraph Road, Bracken Ridge, QLD 4017, Australia
Contact author: Dr Dale L. Thomas, MBBS, MPH, FRAGGP, MRACMA Lieutenant Commander, RANR,
Email: nnavmedc@bigpond.net.au
References


Case report of a patient with high flow priapism serving in the Middle East

1) Colonel (now Brigadier) D Duncan, 2) Captain M Fernance, 3) Colonel R Stack US Army Medical Corps, 4) Dr R Parkinson

Acknowledgement

The authors would like to acknowledge the contribution of Dr Patrick Dunne to the management of this patient and his review and comments on the manuscript.

All figures courtesy of Dr R Parkinson.

Summary

This report outlines the management of a soldier serving in the Middle East who suffered a perineal injury while on out of theatre leave. He presented to a medical officer when he returned to theatre. Fortunately a urologist was in theatre and the patient was moved forward for review at a United States Army Combat Support Hospital. The diagnosis was established on the basis of blood gas analysis of aspirate from the corpora cavernosa and arrangements were made for the member to be returned to Australia for definitive treatment. He returned to theatre after treatment and completed his tour of duty.

Introduction

Australian Defence Force members serving in the Middle East face significant operational and environmental health threats. The health support is well oriented to dealing with these threats. Occasionally they present with unusual conditions unrelated to the theatre and requiring sub-specialist level care not routinely deployed. The availability of sub specialist opinion is a reflection of the mix of skills of the specialists deployed by countries in more generalist roles. With the dispersal of surgical capability across the theatre, the location of these skills does not follow the traditional levels of medical support. Significant specialist skills may be deployed in the forward health support elements from any country the draw back being that they do not have access to the range of diagnostic support capability that is available in their home location.

Priapism (a prolonged penile erection in the absence of sexual desire) is a condition that could have serious long term effects from ischaemia to penile tissue if diagnosis and appropriate management is delayed in some forms. Given the scarcity of resources within a military theatre and the unusual nature of the condition, priapism occurring in a theatre of war presents peculiar challenges to ensure quality care is provided and an acceptable outcome obtained.

History and Examination

A 20 year old male presented to the medical officer at the Australian Defence Force’s point of entry in the Middle East theatre of operations 6 days after sustaining a straddle injury to the perineum while on leave. He was due to return to his unit later that week and was concerned that since the accident his penis had remained semi erect. At the time of the injury he had pain and bruising around the perineum. The initial pain settled to a dull ache. He remained able to ejaculate and reported no haematospermia or pain with ejaculation or urination. He also reported he was unable to achieve a full erection. On examination he was walking normally, there was resolving bruising around the perineum and scrotum but no lacerations or skin tears and his prostate and rectal examination were normal. Testes were normal to examination. Urinalysis was normal. He had no other health issues and no significant history of any medical or surgical problems. An ultrasound was reported as normal (Doppler not available) as was a CT scan.

Initial Management

A search of on-line sources by the treating medical officer provided some clues to the management of this unusual presentation. The need for specialist review to confirm the exact nature of the injury was confirmed. Advice was sought through the technical chain of command to see if there was a urologist available in the theatre. A urologist serving in the Middle East in a United States Army combat support hospital was contacted with the history and he agreed to review the patient. As part of the physical exam, corporal cavernosa blood aspirate was analyzed to confirm the suspicion of high flow priapism. The blood gas results are shown in Table 1.

| pH       | 7.399 |
| pCO2     | 39.2  |
| pO2      | 92    |
| HCO3     | 24.2  |
| O2 sats  | 97%   |

Table 1: Results of blood gases of corporal cavernosa blood at 37°C
The normal pH and normal range room air oxygen and carbon dioxide levels confirmed the diagnosis of high flow priapism. As compared to the urgent nature of treatment for low flow priapism, the non urgent nature of high flow priapism was explained to the patient. Although the soldier was prepared to delay intervention for four more months to serve in the Middle East before returning to Australia, he found walking uncomfortable and was keen to have the condition resolved as soon as possible. The appropriate equipment was not available in theatre so arrangements were made for him to be seen by a urologist in Australia.

Investigations and Treatment

Transperineal Doppler ultrasound demonstrated an injury to the deep artery of the penis, with a fistula between this artery and the corpus cavernosum of the left crus of the penis (see Figure 1).

![Figure 1:](image1)

These findings were better demonstrated on selective angiography of the internal pudendal artery (see Figure 2).

![Figure 2:](image2)

He underwent embolization of the traumatic arteriovenous fistula with Gelfoam, a non permanent material, that is resorbed within one to two months. The final angiogram and a post procedure ultrasound showed resolution of the arteriovenous fistula (see Figures 3 and 4).

![Figure 3 & 4:](image3)

He had an uneventful recovery and returned to the Middle East two weeks after the procedure.

Discussion

General: Priapism is a prolonged erection in the absence of sexual desire. The name derives from Priapus a Greek God (son of Zeus and Aphrodite) associated with fertility. To meet the clinical definition the erection should be present for more than four hours however the clinical spectrum includes duration of many months. Pain is common however it is not essential for the diagnosis.1,2

Epidemiology: The epidemiology for the condition is not well articulated because of the issues of misclassification, inaccuracies related to retrospective data collection and cases usually only coming to
attention because of significant pain or an especially long duration of the condition. It has been suggested that the incidence is between 0.5 to 1.5 cases per 100,000 person years (number of patients with first episode of priapism divided by the accumulated amount of person time in the study population)\(^4\). 

**Pathophysiology:** The pathophysiology of priapism leads to two categories of the condition - low and high flow. Low flow priapism is caused by decreased venous outflow and accompanying venous stasis while high flow conditions are related to an increase in arterial flow generally secondary to a structural injury involving the arterial circulation to the penis. Low flow priapism is a more acute condition because of the potential damage from ischemia related to the venous stasis. Low flow states are associated with various medical conditions such as sickle cell anemia, a range of haemoglobinopathies, parenteral nutrition, haemodialysis, heparin treatment, vasoactive drugs (including erectile dysfunction treatments, hydralazine and chlorpromazine), polycythemia, leukemias, heparin and spinal cord injury. High flow states are associated with trauma such as straddle injury or intracavernous injection needle laceration, some vasoactive drugs, neurological conditions and penile revascularization surgery\(^1,3\). Trauma was the antecedent cause of high flow priapism in 22 out of 27 patients in a Korean multi-centre study\(^9\).

**Diagnosis:** Priapism of any sort requires immediate urological attention in order to determine the underlying cause of the condition. The long term sequelae of untreated low flow priapism are corporal fibrosis and tissue necrosis with loss of natural erectile function. There is also the issue of identification of any associated disorder that requires treatment in its own right. The patient’s history may provide an indication of any underlying conditions but the major diagnostic test is blood gas sampling from the penile cavernosum. Low flow priapism is diagnosed on the basis of low pH, low oxygen and high carbon dioxide levels indicative of ischemia\(^3\). High flow priapism can be diagnosed from a bright red cavernosal sample demonstrating the presence of arterial blood on blood gas analysis\(^8\).

**Treatment:** Case descriptions have been reported in the literature in the 19th century although unfortunately treatment has moved beyond the treatment described in 1824:

“... Mr Callaway resorted to puncturing the left crus with a lancet, ‘allowing a large quantity of grumous blood be let out’. after 16 days of non surgical management including venesection and leeching. Mr Tripe’s sailor had likewise been bled and had had ‘twenty leeches applied to the perineum... Before this he had had cold lotions and rhubarb applied to the penis along with prescription of tartar emetic, calomel and colocynth”\(^2\).

Low flow priapism requires urgent management to reduce the risk of long term problems from prolonged ischaemia. It is managed initially with aspiration of the corpora cavernosa using a non heparinised syringe, giving a 30% success rate. This can be combined with flushing with normal saline. If this is not successful, a vasoconstrictive agent (such as phenylephrine) is instilled at five minute intervals until detumescence is achieved. Of note, proper non-invasive monitoring of pulse and blood pressure should be accomplished while treating with vasoactive medications. If done within 12 hours of onset this has been found to be almost 100% effective (for selective conditions). Treatment for any underlying disorders should be started concurrently\(^3\).

High flow priapism is not an emergency and can be managed initially with a conservative approach\(^10\). The longer terms sequelae are not as severe as untreated low flow cases and spontaneous resolution is common. Treatment also carries a risk of post-treatment erectile dysfunction. The alternate is embolisation of either the internal pudendal artery or, if available highly selective embolisation of a minor vessel that has been damaged can be attempted\(^1,3,7\).

**Conclusion**

This case demonstrates the value of networking in a coalition environment in order to get specialist assistance in the management of an unusual case. The presence of a urologist was determined within a day and an appointment with the urologist was arranged within 4 days. The patient was also moved from what might be called a rear echelon position forward to one of the more active parts of the Middle East for the appointment. Had the appropriate treatment been available he would have also had this in theatre.

Priapism is not listed as a health issue for deployment to the Middle East and is an unusual condition at the best of times. This exemplifies the range of conditions military doctors encounter and reinforces the need for good access to clinical information in the form of text books, on line clinical databases and specialist opinion to manage such patients.

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Authors affiliation: 1. J07 on the ADF HQ JTF 633 (at the time of this case), now the Director General Health Reserves - Army. 2. Regimental Medical Officer with 3rd Combat Support Battalion, Townsville. 3. Urologist at Tripler Army Medical Centre, Hawaii. 4. Interventional Radiologist, Southern X Ray, Wesley Hospital, Auchenflower, QLD 4066 Contact author: Darrell Duncan, Director General Health Reserves Army. Email: djduncan1@pnc.com.au
References


3. Cherian J, Rao A.R, Thwaini A, Kapasi F, Shergill I.S, Samman R; 2006; Medical and surgical management of priapism; *Postgraduate Medical Journal*, 82; 89-94 [downloaded from pmj.bmj.com on 14 Jul 08]


6. Kumar R, Shrivastava D, Seth A; 2006; Spontaneous resolution of delayed onset post traumatic high-flow priapism; *Journal of Postgraduate Medicine*; Vol 52, Issue 4, pg 298 (downloaded from ProQuest)

Public health has done more than any other discipline to address global health issues and improve the standard of living and life expectancy, especially during the past 100 years. Today, we are fine tuning public health in many developed countries and most health professional courses now include a substantial component of public health training. At the postgraduate level, there are more than 20 postgraduate public health programs in Australasia alone, including those offered through the Centre for Military and Veterans' Health. It is important therefore that a concise textbook is available that addresses the contemporary issues in public health. A new textbook, *Essential Public Health: Theory and Practice* is an important addition to the suite of textbooks available in public health. Not to be confused with *Essential Public Health Medicine*, last published in 1993, or the more recently published *Essentials of Public Health*, *Essential Public Health* is ideally placed to be added to booklists of undergraduate and introductory postgraduate public health courses. It has a table of Contents, List of contributors, a Foreword by Professor John Danesh from the University of Cambridge, a second Foreword by Tony Jewell - Wales' Chief Health Officer, Acknowledgements, an Introduction, two main Parts, 17 Chapters, an epilogue, a Glossary and a comprehensive Index.

*Essential Public Health* is presented as an 18.5 x 24.5 x 1.5 cm paperback publication, which could easily fit in the briefcase or student's backpack. The textbook has a simple but attractive coloured cover. The back cover gives brief details of the book and of the editors. The stated primary aim of the textbook is "to capture both the art and science in the field". The stated target audience is "all those training in health care, social care and related disciplines such as environmental health". However, the book will appeal to all academic staff who co-ordinate and teach public health and related programs, as well as students, who are undertaking undergraduate courses in public health and/or introductory postgraduate public health courses. The textbook comes with a CD.


The two Parts of *Essential Public Health* are quite distinct. One recent review even suggested that *Essential Public Health* is really two books in one. Part 1 systematically describes important "tools" and principles of public health, which are core to the discipline. There is good use of tables and illustrations in this Part. Primarily, the CD complements this Part of the textbook, which has a number of self-directed learning questions associated with it. Health promotion, although not a named chapter, is a major component of Chapter 4 Improving population health. Part 2 has well selected contributions from practitioners in the field, which are deemed "essential"; however there will be many topics missing. These chapters help to put the principles from Part 1 into practice. Much is made in the various chapters of "lobbying and working with key stakeholders. . .to resolve problems" (p495) as pointed out in another recent review. However, there is no dedicated discussion concerning public health advocacy, community empowerment or how partnerships, consultations and negotiations with key stakeholders are developed, including the general public.
Book Review

Each of the editors is from the United Kingdom (UK). Stephen Gillam is Director of Undergraduate Public Health Teaching at the Institute of Public Health, University of Cambridge. Jan Yates is a Public Health Specialist with experience of public health practice in Primary Care Trusts, as well as acute hospital and mental health settings. Padmanabhan Badrinath is a Consultant in Public Health Medicine in the Suffolk Primary Care Trust. Of the 12 contributors, only one resides outside of the UK. It may be useful in future editions to have more contributors from other countries to further internationalise what is already a very useful textbook.

Essential Public Health is a useful introductory textbook in the field of public health and an ideal undergraduate teaching resource. It is a compact two-in-one textbook, which covers both the principles and the practice of public health. This first Edition of Essential Public Health: Theory and Practise is a creditable effort and is sure to gain entry into the relatively competitive market of public health textbooks, especially with the University of Cambridge Press behind it.

Contact author: Peter A Leggat, MD, PhD, DrPH, FAFPHM, FACTM, FACRRM, Professor and Head, School of Public Health, Tropical Medicine and Rehabilitation Sciences, James Cook University, Townsville, Queensland, 4811, Australia.
Email: peter.leggat@jcu.edu.au

References


Fast Facts - Eczema and Contact Dermatitis

Eczema is a common condition affecting both adults and children. Atopic eczema affects more than one in ten children in developed countries, with an incidence that is increasing. Adults are not spared, with eczematous diseases accounting for 94% of notifiable skin disease and ranked third among all notified occupational disease in one large Danish study. Both childhood atopic dermatitis and contact dermatitis have a major impact on both patients and their families’ quality of life. Confirmed diagnosis is associated with an improved quality of life for contact dermatitis. The Australian Bureau of Statistics also lists the most common reasons for using skin ointments or creams as eczema and/or dermatitis (22%). Of note for military personnel is that a history of atopic dermatitis is described as a contraindication to smallpox vaccination.

Most health personnel will encounter eczema in daily practice and correct and early diagnosis along with appropriate management is obviously important. Help with this is at hand thanks to this text.

Fast facts – Eczema and Contact Dermatitis is presented as a 94 page A5 publication that would fit easily into the briefcase or carry bag. The small footprint would make it equally valuable as an easy to access desktop reference and would also fit easily in the pockets of the rapidly disappearing but once ubiquitous white coats of hospital based medical staff. It contains a table of contents, introduction, eight...
sections, sources of further information and an index. There is no forward although this is not surprising given the concise nature of the text.

The text itself is intended to help familiarise "the non dermatologist reader with the aetiology, diagnosis and treatment of the various forms of this disease". The target audience is described as "physicians in many different medical disciplines", as well as primary care physicians and other healthcare professionals. This could include medical and nursing students, pharmacists, allied health staff and even the informed family member or patient.

The introduction is worth reading as a guide to definitions and classification of the disease. The subsequent sections include "1 – Allergy and contact dermatitis", "2 – Irritant contact dermatitis", "3 – Atopic eczema", "4 – Photosensitive eczema", "5 – Seborrheic eczema", "6 – Hand and foot eczema", "7 – Other forms of eczema" and "8 – Future trends". Most sections follow a standard format consisting of epidemiology, pathophysiology, clinical presentation, diagnosis, treatment, patient education, complications, prognosis, key points and key references. The sections are also colour coded enabling ease of access, which is important in a desk top 'fast facts' text.

The book is easy to read and clearly set out. Particular strengths are the 'Key Points' sections at the end of each section and the quality of the illustrations. The adage that 'a picture tells a thousand words' is never more so than in dermatology. The quality of image reproduction is very good for a pocket guide and each has been carefully selected to clearly demonstrate specific aspects of the disease. Additionally the diagrams illustrating body distribution of different types of eczema are a valuable reference and particularly suited to a fast facts style presentation. The reproduced diagram guiding application of the correct amount of topical steroid is especially useful and would be a valuable tool for patients or carers. This diagram is representative of the books approach to management advice which is practical and clearly stated. The inclusion of patient education is also a valuable and important resource. As both an Emergency Physician and the parent of a child with severe eczema, personal experience is that this is an important and often neglected area in many texts.

Brief details of the three authors are provided at the start of the book. John Berth-Jones is a Consultant Dermatologist at United Hospitals Coventry and Warwickshire NHS Trust, Coventry, UK. Eunice Tan is a Specialist Registrar in Dermatology at Norfolk and Norwich University Hospitals, Norwich, UK. Howard I Maibach is a Professor of Dermatology at the University of California, San Francisco, USA.

The background of the authors is reflected in the book and creates some limitations particularly for Australasian readers. Sources of further information are limited to Europe, UK and USA associations for eczema and dermatology. Similarly the text uses the British National Formulary so there are likely to be some variations in practice and availability. A minor point is that although the stated intention of the authors is to use an evidence based approach whenable this is not clearly referenced. Key references are supplied at the end of each section but not directly linked to statements nor are levels of evidence supplied.

These issues aside this is an excellent text and one that is highly recommended. A minor but important point of note in today's society is that the text is printed in vegetable ink and on biodegradable paper. The copy reviewed was provided by CSL Biotherapies as a service to medicine. The same can be said of the author's contribution – well done.

Contact author: Peter Aitken, MBBS, FACEM: Associate Professor, Anton Breinl Centre, James Cook University, Townsend, Queensland 4811, Australia; Senior Staff Specialist, Emergency Department, TP Townsville Hospital; Noel Stevenson Research Fellow, Queensland Emergency Medicine Research Foundation. Email: peter.aitken@health.qld.gov.au

References
Rear Admiral Graeme Shirtley
RFD RANR MB BS (NSW), DDR (Syd), FRANZCR

Russ Schedlich, Neil Westphalen

Rear Admiral Graeme Shirtley RFD R ANR ser ved as the Surgeon General Australian Defence Force (SGADF) for just over three years. During that time he was Patron of the Australian Military Medicine Association and provided great support for its development, aims and objectives.

Graeme's clinical career has been as a radiologist. Subsequent to his graduation from the University of NSW in 1974, he was awarded a Diploma of Diagnostic Radiology from Sydney University in 1979 and his Fellowship from the Royal Australasian College of Radiologists (now the Royal Australian and New Zealand College of Radiologists) in 1980.

Since then, Graeme has been active in private practice in Sydney developing his special interests in CT imaging, musculoskeletal imaging (particularly with ultrasound) and mammography. From 1989 to 2003 he was a senior visiting medical officer with the Central and Eastern Sydney Breast Screening Program at the Royal Prince Alfred Hospital. He has been chairman of the CT group of the RANZCR Accreditation and Quality Control Subcommittee, and the radiologist on the Professional Services Review Committee of the HIC for the Federal Government. He was also Chairman of his Radiology group from 1995-9.

In 1992 Graeme was a Visiting Fellow in MRI at the Barrows Neurological Institute in Phoenix Arizona, and at the MRI Institute Presbyterian Hospital in Pittsburgh Pennsylvania. He is a member of the Radiological Society of North America.

Graeme Shirtley's naval career has been no less impressive. He joined the RAN as a reserve junior sailor in 1969, coming top of his recruit course and joining the Medical Branch as a Reserve Ordinary Sick Berth Attendant (ORD SBA, now SMNMED). Over the next six years he was promoted through the ranks to Leading Seaman in the Reserves during which time he continued to progress through medical school.

On completing his medical degree in 1975, Graeme was commissioned as a Lieutenant. He progressed to Lieutenant-Commander in 1981 and then to Commander RANR in 1987. From 1985 to 1987 he was Deputy Senior Medical Officer (SMO) of the Sydney Port Division, and in 1986 he completed and topped his Reserve Staff Acquaint Course. That year he was also awarded his Reserve Forces Decoration (RFD).

Following his promotion to Commander, Graeme became SMO of the Sydney Port Division and was the senior reserve Medical Officer for Exercise Kangaroo 89. From 1991 he was acting Executive Officer of the Sydney Port Division, and in 1992 was awarded a Flag Officer's Commendation from Rear Admiral David Holthouse (then Flag Officer Naval Support Command) for his work in developing a program for training of Reservists in military medicine.

Graeme's seagoing service includes the Navy's two aircraft carriers, HMAS Melbourne and HMAS Sydney, HMA Ships Vendetta, Torrens, Stuart, Brisbane, Stalwart, Supply and Darwin. He has also served ashore in HMA Ships Cerberus, Penguin, Kuttabul, Albatross, and Stirling, and in recent years in Canberra.

Graeme was appointed consultant radiologist to the Director General Naval Health Service in 1985 and to SGADF in 1990. In 1986 he was appointed ADF representative to the radiology committee of The
Standards Association of Australia. He has been a member of the Radiology Steering Group for the SGADF from 1985, and when this became the Medical Imaging Consultative Group in 2000 he was appointed the inaugural chairman.

Overseas, Graeme has been a visiting lecturer to the Department of Radiology National Naval Medical Centre (NNMC) in Bethesda Maryland USA in 1994, 1998 and 1999, and for his efforts was awarded the US Navy and Marine Commendation Medal and the US Navy Achievement Medal. He was also a guest lecturer at the Uniformed Services University of the Health Sciences (USUHS) in Washington DC in 1998, where he was appointed Adjunct Assistant Professor of Radiology and Nuclear Medicine in August 2002.

Graeme has also researched US military experience with computed and digital radiography systems with a view to their implementation into the ADF as part of Joint Project 2060. He is a member of the Association of Military Surgeons of the United States and was appointed to its International Committee in March 2006.

Graeme was promoted to Captain RANR on 31 December 1998 and the following day was appointed Director Health Reserves-Navy (DHR-N). In July 2000 he was appointed the inaugural chairman of the National Reserve Health Triumvirate, with the role of advising the Director-General Defence Health Services (then Brigadier Wayne Ramsay RAAMC) on all reserve health matters, as well as coordinating reserve health service personnel training, recruiting and retention for all three Services.

Whilst DHR-N, Graeme worked to achieve rank equity for Navy health officers compared to their Army and Air Force counterparts. Other issues included training, age of retirement and a new scheme of complement for naval health specialist reservists. These initiatives were intended to allow the Navy Reserve Health Branch to enhance the capability of the ADF Health Service, and resulted in recruiting 12 additional health officers in the first year after the change.

As DHR-N, Graeme was also the Reserve representative on the Naval Health Board Advisory Council. This council provides advice on professional development, career management, recruiting retention and best practice benchmarks for the human resource management of Naval Health Branch personnel. He also had articles published in ADF Health and Australian Military Medicine on ultrasound and its role in the ADF, telemedicine, virtual endoscopy and restructuring of the Reserve Health Branch of the RAN.

On 27 September 2002 Graeme was promoted to Commodore and appointed Assistant Surgeon General Australian Defence Force – Navy. In this role he liaised with State Departments of Health to establish strategic alliances with the teaching hospitals to increase the experience of Permanent Forces doctors, nurses and medics in trauma management. He also established ‘mini-fellowships’ in trauma management in South Africa for reserve surgeons, anaesthetists and intensivists. His most recent projects were the establishment of an affordable pilot e-health system for the ADF and investigating personal digital assistants as an aid in the delivery of health care in the ADF.

In October 2004 Commodore Shirtley became the first Reserve officer to undertake the Capstone program, a one-week live-in staff acquaint course for one-star officers.

On 09 May 2005 Graeme was promoted to Rear Admiral and appointed Surgeon General. During his tenure, Admiral Shirtley was the Chairman of the Australian Defence Human Research Ethics Committee. He has been an Adjunct Associate Professor at the University of Queensland in the Centre for Military and Veterans Health (CMVH) since January 2006, and is Chairman of the CMVH e-Health Committee. He also continued to conduct courses in ultrasound for trauma surgeons as part of the Royal Australian College of Surgeons teaching program.

On 04 July 2008, with the restructure of the senior ADF health leadership, Admiral Shirtley was appointed Surgeon General Defence Health Reserves, finishing up in that position on 31 December 2008. He is continuing his active work with the Reserves, soon to visit Bethesda Naval Medical Centre in Washington in a teaching role.

Graeme is married with three adult children. His sporting interests include golf, tennis, windsurfing and sailing. He is a member of the Concord Golf Club and the Ashfield RSL. In his spare time he is completing a Masters in Legal Medicine at Griffith University.

Graeme Shirtley is the first naval medical officer to become Surgeon General Australian Defence Force since that position was established in the early 1980’s, the first to achieve the rank of Rear Admiral as a Reservist, and the first to achieve the rank of Rear Admiral since Geoff Bayliss (DGNHS 1987-1990).

During Graeme’s time as Patron of AMMA, he strongly supported its activities, including the second AMMA/Defence Health Services conference in 2006 and the establishment of The Journal of Military and Veterans’ Health, in addition to presenting papers at each of the last four conferences.

Graeme was proud to be Patron of the Association, and he is also proud to be Patron of the Navy Reserve Association, an honour formerly reserved for seaman officers. He can be justly proud also of his long, distinguished and continuing naval, military and clinical career.
Lydia Stevens 1948-2009

Eulogy delivered by Group Captain David Stevens RAAF (Rtd)

Lydia's life was very full and very varied and I would like to share some of the stories of her life with you.

Ludmila Marik was born on 27 August 1948 in Pilsen in what was then Czechoslovakia. She was born prematurely and was not expected to survive, but survive she did. That fighting spirit was to remain with her throughout her life.

Her late father was involved in the Czech underground in World War II, helping the escape from the Nazis of a number of American aircrew and prisoners of war. When the communists took over Czechoslovakia in 1948, the underground movement reformed to assist the escape of political prisoners and Lydia's father was again involved. In March 1949 he received a phone call to say ‘they are coming for you’. He came home, hurriedly explained what he dared to Lydia's mother and carrying a small bag of food he escaped on foot across the border into Germany, where he was taken under the protection of the Americans. Three months later her father arranged for Lydia and her mother to be assisted to also escape into Germany.

Lydia's father later decided that they should migrate to Australia because he thought that that was about as far as one could get from communism. The family arrived in Sydney on the MS Nelly on 15 January 1950. The family was split with Lydia and her mum being sent to Parkes and her father to Sydney to find work. Lydia's father was adamant that the family should be together and after about six months he was able to reunite them in a rented flat at Palm Beach. Later he bought a block of land at Mona Vale and this became the family home. Lydia's upbringing was fairly conventional, although a smart teacher told her parents to teach her to speak Czech and leave it to school to teach her English, hence her bilingualism and her beautifully spoken English.

Lydia's high school education was at the Stella Maris College in Manly which was where she learnt her Christian morality and ethics: there was always a right way to do things, all people were created equal and a friendship was something to be valued for life. These values were to remain with her throughout her life.

Having completed high school, she chose to become a nurse and gained a position at St Vincent's in Sydney. Showing a particular flair for theatre nursing, most probably because of her orderly and logical mind, on graduation in March 1970 she was offered a position at St Vincent's Private Hospital.

The early 1970s were a period of great advances in surgery and Lydia was proud of the fact that she was part of the team that performed the first knee replacement in Australia and only the second heart transplant in the country. She subsequently became a nurse educator and her sister Anna was one of her students.

In the late 1970s, and before the term 'sea change' had been invented, Lydia decided to seek a new direction in her life and joined the Royal Australian Air Force as a Nursing Officer. Within days she met one of her dearest friends, Jeanette Murphy, and they became the first two nurses to undertake the full officers initial training course at the Officers Training School, Point Cook. I understand that Lydia was not beyond telling some of the staff that they were badly lacking in teaching skills. On graduation both Jen and Lydia were posted to Butterworth, Malaysia, and it was here that she made another lifelong friendship with Helen Bidstrup, then the Anaesthetist at the RAAF Hospital, and another nursing colleague, Wendy Phillips.

Lydia did not particularly enjoy Butterworth, she found it culturally barren, no opera etc, but I do know that she enjoyed the social life and made many friendships which remained throughout her life.

Jumping ahead, in late 1981 she was seconded to the International Red Cross as part of an Australian surgical team working in the Khao-i-Dang refugee camp on the Thai/Cambodian border, set up as a consequence of the Vietnamese invasion of Cambodia. Not only did the team learn much about how to treat battlefield wounds such as land mine injuries and gun shot wounds, but they were also able to perform therapeutic surgery to fix cleft palates and other birth deformities. Some years later it was suggested to Lydia that this service might be recognised by the award of the Humanitarian Overseas Service Medal. She approached the Governor-General’s office, who advised that it fell within the scope of the award but that the schedule to the Act would have to be changed to cover service in Cambodia. This was eventually done and Lydia became the first ADF member to be awarded this medal.

In 1982 Lydia was the first female to undertake the new basic staff college course at RAAF Fairbairn. Whilst on course, she later told me, her friend Jen rang and asked what the talent was like on the course; Lydia replied ‘not much but there is this gorgeous Wing Commander over at the bar’. To which Jen responded: cultivate him. We, David and Lydia Stevens, became a couple with a ready-made family in 1983.

Lydia's late father was involved in the Czech underground in World War II, helping the escape from the Nazis of a number of American aircrew and prisoners of war. When the communists took over Czechoslovakia in 1948, the underground movement reformed to assist the escape of political prisoners and Lydia's father was again involved. In March 1949 he received a phone call to say ‘they are coming for you’. He came home, hurriedly explained what he dared to Lydia's mother and carrying a small bag of food he escaped on foot across the border into Germany, where he was taken under the protection of the Americans. Three months later her father arranged for Lydia and her mother to be assisted to also escape into Germany.

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Lydia was never one to do things by halves. At various times in the 80s and 90s she was a Fellow of the NSW College of Nursing, the Royal College of Nursing Australia and the Australian Military Medicine Association. Being Lydia, she was an active participant and was on the Councils of all three so she could help in the advancement of nurse education, the status of nurses within the health profession and the development of military medicine as a specialist grouping within the health profession.

Another highlight of Lydia's career was to be chosen as one of the nurses to escort the Gallipoli veterans who returned there for the 75th anniversary of the landings in 1990.

Throughout her career Lydia always gave her all to the job at hand and in 1996 she was awarded the Conspicuous Service Medal for her achievements and devotion to duty as Staff Officer for Health Training, Education and Nursing at RAAF Headquarters Training Command.

In 1996 Lydia decided that she wanted to further her educational qualifications and embarked on a Master of Nursing Studies. She said to me at the time that she wasn't going to be one of those people who took one subject a semester and took years to complete the course. She took it on as a three-year external course, despite holding down a full time job. She graduated in December 1998. Her thesis was entitled 'Continuing Nurse Education in the Australian Defence Force'. So in 1999 Air Force posted Lydia out of the nursing environment to become Deputy Director Reserve Personnel and Cadets and this became the third sea change in her life.

She embraced the concept of the then Air Training Corps and what it was doing for the youth of Australia and in her inimitable fashion set out to improve their status, their funding and their control of their own organisation. Through dint of belief in what she was doing, sheer hard work combined with her personal and managerial skill she achieved what she had set out to do. Along the way she fought many battles but made many friends and as far as I am aware, no enemies. She also won the respect and support of many senior officers within the Air Force.

Not only was Lydia dedicated to her Air Force functions but she was also a member of a number of outside organisations. She was a member of the Royal Australian Air Force Association and of the RSL but perhaps the most important outside activity to her was her membership of Rotary. Both she and I were charter members of the Rotary Club of Jerrabomberra when it was formed in 1998. Lydia in her inimitable way embraced the concept of service to the community and gave her all to help. She was a member of the club board in different capacities almost every year and was honoured to be elected President in 2000. In addition to administrative roles Lydia was always the first to volunteer to organise and run a BBQ, a fund raising dinner or to help in a community activity. In the current rotary year Lydia was Attendance Officer, Chairman of the Autumn Fete Organising Committee, on the Community Time Capsule Project Committee, and on the committee organising the club's 10th Birthday Dinner on the 29th November last which regrettably was to be one of the last Rotary meetings she was able to attend. This year was the first time in many years that she was not up front serving at the club's Australia Day breakfast.

Lydia retired from the Permanent Air Force in 2003 but transferred to the Air Force Reserve and continued with her involvement with cadets until the end.

Lydia's illness was diagnosed in November last shortly after we returned from an overseas holiday. She knew from the beginning that the cancer was aggressive and wide-spread throughout her body. After initial disbelief and the 'why me?' reaction she accepted her condition and stoically bore the progressive decline in her quality of life. Being Lydia her thoughts were always of others, she was concerned that she was being a burden to me and to her family and friends; never so.

On 5 February Lydia was awarded a Chief of Air Force Commendation for her ten years of service to the Australian Air Force Cadets. I thank Air Marshal Binskin and Air Commodore Harrison who expedited the award so that it could be presented to her personally. I like to think that she was aware of the presentation that afternoon. Regrettably she passed away only a few hours later with her family at her bedside.

Lydia was a very intense and passionate person; her Christian sense of morality always guided her life. She loved life and she loved people; she loved a challenge; she had great organisational skills and loved to put them to good purpose; she was kind, sincere, compassionate and concerned for others; and she was immensely loyal to her family, to her friends, and to those she worked for and with and particularly to me. In return I know that she was held in high regard and esteemed and loved by all.

Lydia was a proud person, but not in a vainglorious way, just in the satisfaction of whom she was and what she had achieved, both her own and mine, she loved them all dearly.

Farewell Lydia, we all love you.
Honours and Awards

The Australian Military Medicine Association is pleased to note, honour and congratulate the following health professionals on their receipt of honours and awards in recent months.

2009 Australia Day Honours

**Member of the Order of Australia (AM)**

**Group Captain Alexander Ralph CATO RFD, VIC**

For exceptional service to the Royal Australian Air Force Specialist Reserve as the Director of Air Force Health Reserves – Personnel, and Senior General Surgeon - deployable surgical elements within the Australian Defence Force.

Group Captain Cato displayed exceptional leadership and innovation as the Director of Air Force Health Reserves - Personnel. His mentorship, professionalism, dedication and loyalty have earned him the respect of his peers and subordinates alike. He has facilitated, through excellent leadership, the most significant change to the Specialist Reserve health element since its inception, thereby setting the basis for an enduring and sustainable health capability for the Australian Defence Force. Group Captain Cato’s performance is in the finest traditions of the Royal Australian Air Force and the Australian Defence Force.

**Conspicuous Service Cross (CSC)**

**Brigadier Brian Patrick PEZZUTTI RFD, NSW**

For outstanding achievement as a specialist anaesthetist and adviser to the Defence Health Services Division.

Brigadier Pezzutti’s performance has been exceptional. His enthusiasm, skill and commitment are of the highest calibre. By his actions and policy initiatives on a wide range of topics, he has enabled the recruitment of anaesthetists and health personnel to the Australian Defence Force. His experience and dedication have been vital to the success of humanitarian assistance missions. Brigadier Pezzutti’s performance is in keeping with the finest traditions of the Australian Army and the Australian Defence Force.

**Lieutenant Colonel Stephanie Elizabeth HODSON, ACT**

For outstanding achievement as the Commanding Officer of the 1st Psychology Unit.

Lieutenant Colonel Hodson is a dedicated officer whose vision, enthusiasm and energy enabled her to provide psychological support to operations in East Timor, the Solomon Islands and the Middle East Area of Operations. She has also worked tirelessly to train newly appointed psychologists, better posture psychological support through the completion of data analysis studies, link data collection and personnel reporting systems, and educate senior personnel on operational issues.

**Colonel Janet Fiona SCOTT, SA**

For outstanding achievement as the Commanding Officer of the 3rd Health Support Battalion and as the senior Dental Officer in South Australia.

Colonel Scott has made a substantial and lasting contribution to the development and operational preparedness of the 3rd Health Support Battalion due to her outstanding personal commitment and exemplary management skills. Her performance as the Commanding Officer has greatly enhanced the Army’s medical support capability and 3rd Health Support Battalion ability to provide efficient and effective health support for both exercises in Australia and for operational requirements.

**Member of the Order of St. John (NZ)**

**Brigadier Anne Campbell** is to be admitted as a Member of the Order of St John.

The Order of St John is an independent part of the New Zealand Royal Honours System, and membership is limited to people who have made a significant contribution towards the Order’s aims.

The Queen is the Sovereign head of the Order, and must sanction the admission of all members.

The key obligations of Order membership are to act as a person of honour, to care for the weak, the poor and the sick, and to act with decency and integrity.

New Zealand New Year’s Honours

**Member of the New Zealand Order of Merit (MNZM)**

**Warrant Officer Class One David Leslie ARMSTRONG Royal New Zealand Army Medical Corps (Territorial Force)**
Instructions to Authors

1. Purpose and scope

The Journal of Military and Veterans’ Health is a peer reviewed journal published by the Australian Military Medicine Association. The aim of the journal is to promote excellence in the discipline of military and veterans’ health, to promote research and to inform and educate all those practicing as health professionals or who have an ongoing interest in this area. The scope of the journal covers all aspects of health of service personnel from enlistment and service within a military organisation to post service health care as a veteran. Environmental and related aspects of employment are included in this scope so that the journal provides a unique forum for discussion and research related to a wide range of health issues arising from exposure to military environments. This scope is very broad including, for example, mental health, trauma, health training and effects of environment on health.

Editorial Office

Please address all non-electronic correspondence to:
Journal of Military and Veterans’ Health
113 Harrington Street
Hobart TASMANIA 7000
AUSTRALIA

Email: editorial@jmvh.org
Tel: 613 6234 7844
Fax: 613 6234 5958
URL: http://www.jmvh.org

Submission of manuscripts

Electronic submission of manuscripts is mandatory.

Manuscript requirements

Manuscripts submitted to the Journal of Military and Veterans’ Health must conform with the Uniform requirements for manuscripts submitted to biomedical journals (www.icmje.org).

2. Categories of manuscripts

The Journal of Military and Veterans’ Health publishes articles related to health of military personnel and veterans within two broad areas of interest:

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Each issue may not contain all categories of articles. The word limit does not include text in the abstract, references, figures and tables. The requirements for submission categories, which are peer reviewed, are

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<td>Obituaries</td>
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Instructions to Authors

Original research
This category is the primary mode in the journal for communication of findings from original research studies.

Short communications
This category is for communicating the findings from small-scale research studies however other subject material will be considered.

Review articles
Authors who wish to submit a review should first contact the editors to determine its suitability for publication in the journal. The editors encourage authors to submit systematic reviews for publication.

Reprinted articles
This section will include full length copies of articles reprinted with permission from other journals. These articles must be keynote and valuable contributions to health issues in the military and veterans’ areas. Readers are invited to email details of papers that should be considered for this category. Any proposal should be accompanied by a short commentary (maximum 200 words) outlining why this historical paper was important in shaping some aspect of military or veteran health practice. The commentary will be published with the keynote article.

Case studies
This category is primarily designed to present details of interesting or unusual clinical cases and a summary is required with a limit of 100 words. The text should be presented using the following headings: background, history, examination findings, special investigations, discussion including differential diagnosis. The article should succinctly illustrate important points.

Abstracts from the literature
This category will include abstracts of seminal work published in other journals which is related to the scope of the Journal of Military and Veterans’ Health. Readers are invited to email references to papers that are considered to be valuable to healthcare professionals and others in the military and veterans domains. The editors acknowledge that many of our readers may not have facilitated access to comprehensive reference libraries.

Letters to the Editor
Letters may comment on material that has recently been published in the journal or may address new topics, such as use of new equipment or instrumentation in the field or a new technique applicable to preventive medicine. Where the subject matter is directed towards a previous publication the editors will usually send the letter first to the authors of the original paper so that their comments may be published at the same time as the letter.

Editorials
Submissions are encouraged for publication in this category and these will be subjected to the peer review process. Topics of interest must fall within the scope of the Journal of Military and Veterans’ Health. Guest editorials may be invited from time to time by the editor; suggestions for topics for editorials should be directed to the editor.

Biographies
Biographical accounts of the work of individuals who have made outstanding contributions to the health and care of military personnel and veterans will be considered for publication. If you wish to submit a biographical article the editor should be consulted prior to preparation of the article. The editorial board may solicit such articles directly.

History
Articles describing notable themes related to health and care of military personnel and veterans are invited for publication. The scope is broad and could include, for example, the conduct and outcome of military operations, effect of climate, improvements in trauma care, surgical techniques and mental health. The article should focus on health care delivery and practice as the main theme and may compare changes from earlier practice to those in use today. The editorial board may invite such articles directly however if you wish to submit a manuscript the editor should be consulted in advance. The style of this category will be the same as that applied to a review article.

Obituaries
The editorial board will accept obituaries for individuals who have served as health professionals within the Australian Defence Force. These have been very successful in the British Medical Journal (BMJ) to provide information to the wider health readership. Guidance for preparing an obituary can be found on the BMJ web site, www.bmj.com (e.g. BMJ 1995;311:680-681 (9 September) and BMJ 1995;311:143-144 (15 July)). Obituaries should be submitted within one month of death and will be subject to editing if required.
Instructions to Authors

Book reviews
Reviews of publications which have a direct focus on military and veterans' health for educational, informative, reference or other reasons will be invited. The author/s would be expected to be independent, have considerable experience and/or a track record and a direct involvement in the field which is addressed by the publication.

Commentary
Commentaries will be short articles which provide incisive, informative and balanced comment on current health issues. The editors may invite commentary on a research paper published in the same edition of the journal. All commentary articles will be peer reviewed and the article style will be that of an editorial.

A view from the front
This category will consider submissions from health individuals at the front line of health care and health delivery to serving personnel and veterans. These articles should be topical, recent, may contain an individual's personal view of a health delivery system and will be subject to peer review.

3. Editorial policy
Original material
The Journal of Military and Veterans' Health publishes original work describing health related research studies. Submitted manuscripts must not have been published or submitted for publication elsewhere, either in whole or in part. This applies to both paper and electronic methods of publication but not to abstracts presented to scientific meetings. Authors planning to submit review articles should first contact the Editorial Office to ensure the appropriateness of the subject material.

Disclaimer
While the Editorial Board makes every effort to ensure that no inaccurate or misleading data, opinions or statements are published in the journal, all data, results and opinions appearing in articles and advertisements are the responsibility of the contributor/s and/or the advertiser concerned. Accordingly the Editorial Board and their respective employees, officers and agents accept no liability whatsoever for the consequences of any such inaccurate or misleading data, results, opinions or statements. While every effort is made to ensure that all data are accurately presented, new methods and techniques should only be considered in conjunction with published literature from manufacturers.

Ethics approvals
All studies that involve participation of humans, information on participants or which would otherwise be considered to require ethical approval related to the principles set forth in the Helsinki Declaration should be conducted in accordance with such principles. Studies of this nature must contain a statement indicating that approval has been granted by a properly established Human Research Ethics Committee.

All studies involving experiments with animals must contain a statement indicating that the protocol was approved by an appropriately constituted ethics committee or institutional review board in compliance with guidelines established by that country's government. A statement must be included that indicates that all animals received humane care in compliance with these guidelines.

Confidentiality
Confidentiality must be maintained in relation to all participants. All presented data must be de-identified. If a participant is able to be identified from illustrations, photographs, case studies or other study data then release forms or copies of permission for publication must be submitted with the manuscript. All potentially identifying information (including patient likenesses, identification numbers, names and initials) must be removed from images, tables, graphs, charts and text before the manuscript is submitted.

If a reference is made in the text to personal communication (oral or written) as a source of information, a signed statement of permission is required from each source. The year of receipt of these statements should be provided in the text. Use of personal communication as a reference will only be accepted in special instances.

Informed consent
A statement must be included indicating that informed consent was obtained from all participants if data were obtained from or were related to human participants.

Authors Process form
Each author must complete this form and forward the original signed copy to the editorial office. A faxed or scanned image may be submitted electronically to...
maintain the editorial process however the original
completed form must be received by the editorial office
before publication.

Copyright assignment
Copyright for each submission is to be assigned to the
Journal of Military and Veterans' Health or provision
for a licensing arrangement must be completed
(Authors Process form).

Conflict of interest and funding
Authors are responsible for recognising and disclosing
financial and other conflicts of interest that may bias
or could be perceived to bias their work. They should
acknowledge in the manuscript all financial support
for the work including any control over publication
by funding bodies and other financial or personal
connections to the work. Each author must complete
the conflict of interest and funding section of the
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Authorship and acknowledgments
Each author must indicate their contribution to
preparation of the manuscript (Authors Process form).
The corresponding author is responsible for ensuring
that all individuals who do not satisfy the criteria
for authorship are noted in the acknowledgements
section together with a brief description of their
contribution.

Sole submission
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same or similar material. This includes submission
by the authors and their colleagues in the interval
before this work is published. Submission by authors
of similar material to advertising, news media or
other forms of publication must be indicated when
the Journal of Military and Veterans' Health receives
your manuscript and a copy of that material should
be provided with your manuscript.

Peer review
Two or more referees are assigned to review each
submission (except for Book Reviews and Reprinted
Articles). Acceptance of original articles is based
on significance, originality, scientific quality and
interest to the Journal of Military and Veterans' Health readership. If the submission is accepted
for publication, editorial revisions may be made
to aid clarity and understanding without altering
the meaning. Authors are given the opportunity to
nominate reviewers whom they believe are expert and
impartial in their area of interest.

Offprints
A copy of the final paper will be provided to the
corresponding author in pdf format. A copy will be
available from the journal website (www.jmvh.org) for
interested individuals to download. These copies are
made available for single, personal use only and are
not available for commercial or other use.

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the copyright holder (and authors as applicable)
and a copy of this permission provided with your
submission. Any reproduced material must be clearly
identified and its source and permission noted in the
manuscript.

Clinical trial registration
We define a clinical trial as “Any project that
prospectively assigns human subjects to intervention
and comparison groups to study the cause-and-effect
relationship between a medical intervention and a
health outcome (ICMJE definition). These should be
registered, including early phase uncontrolled trials
(phase I) in patients or healthy volunteers (WHO
Recommendation).”

The Journal of Military and Veterans' Health requires
all clinical trials to be registered with a registry that
is accessible to the public (at no charge); is searchable
using standard, electronic (internet) means; is open
to all prospective registrants at minimal or no cost;
validates registered information; identifies trials with
a unique number; and includes basic information
related to the researchers and the trial.

If you are submitting a randomised controlled trial,
add the registration number of the trial and the
name of the trial registry in the acknowledgements
section of your manuscript. Other trial registers that
currently meet all of the International Committee of
Medical Journal Editors (ICMJE) and World Health
Organization (WHO) requirements can be found at

Registries that meet these criteria include:

- Australian Clinical Trials Registry
  (www.actr.org.au/)
- US National Library of Medicine (sponsor)
  (www.clinicaltrials.gov)
- The International Standard Randomised
  Controlled Trial Number registry
  (www.controlled-trials.com)
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- The National (UK) Research Register (www.update-software.com/national/)
- European Clinical Trials Database (http://eudract.emea.europa.eu/)

Language

All manuscripts must be written in English. Spelling and phraseology should be to either standard English or standard American usage and should be consistent throughout the manuscript. Contributors with a non-English native language are encouraged to seek the help of a competent linguist who is familiar with medical terminology prior to submission. It is the author’s responsibility to have the language revised before submitting the work for publication. Only minor language revisions are provided after submission.

Review process

Receipt of all submitted papers is acknowledged by email. Manuscripts are initially assessed by the editors and then sent for external review to experts in the field. The corresponding author will be notified by email when a decision is reached. To aid in the peer review process we invite authors to suggest potential reviewers, with their contact details, in the cover letter.

Reproduction of articles, figures and tables

If you would like permission to reproduce an item from material published by the Journal of Military and Veterans’ Health, contact the editorial office by email editorial@jmvh.org.

Software and format

The manuscript must be supplied in Microsoft Word in .doc format (Word 2007 file format not accepted at this point in time) or in rich text format. Files prepared in other packages will only be accepted and considered provided they are compatible with Microsoft Word and that any reformatting is minor. Files prepared in various desktop publishing proprietary formats will not be accepted.

4. Organisation of manuscripts

Papers will differ in structure depending on category. These instructions refer to sections of manuscripts independent of category where these sections are included. For original research articles the structure should follow the order below with each section beginning on a new page. Reviews should commence with an abstract and then be organised such that the information is presented in a logical sequence with informative headings and sub-headings related to the content.

Title page

The manuscript should be preceded by a title page which includes the following information:
- Concise title of manuscript
- Name, address, title, highest qualification, affiliation and contact details (email, postal address, telephone and fax) for each author
- Identify corresponding author
- Identify (email) address for correspondence (corresponding author)
- Short running title (maximum 50 characters including spaces)
- Word count (text of paper only – excludes abstract, references, figures and tables)

Abstract

The abstract for original articles should be structured under the following headings: Background, Purpose, Material and Methods, Results, Conclusion. The Background must be a maximum of two sentences. Maximum length of the summary should be 250 words with three to five key words or phrases included below the abstract or summary.

Conflict of Interest

All conflicts of interest must be disclosed in full in this section of the manuscript. These may include, but not be limited to, specific or “in kind” interests, incentives and relationships in respect of the manuscript (e.g. grants, funding, honoraria, stock ownerships, royalties, payment of expenses). This section applies to all authors.

Introduction

It should be assumed that the reader does not have a comprehensive knowledge in the field and you should therefore provide a concise account of the background (including relevant literature references) and reasons for this study.

Materials and methods

Descriptions of any techniques and methods must provide sufficient detail such that a reader can replicate the procedures. Methods that have been published elsewhere should not be described in detail and should be referenced to the original work

Statistics. A full description of the statistical methods used should be provided.
Instructions to Authors

Results
Description of results, while concise, should permit repetition of the procedures and direct comparison with similar data by others. Data should not be repeated unnecessarily in the text, figures and tables and appropriate selection of significant figures for numerical data presentation should be applied. Significance should be expressed as values of probability. Where appropriate, results should be presented as figures rather than tables of data.

Discussion
The discussion should not simply reiterate the results presented; the authors should present their analysis and conclusions with reference to the current knowledge base related to this work. Any assumptions on which conclusions may be based should be stated and there should be some discussion of strengths and weaknesses of the research.

Acknowledgements
These should be brief and should include references to sources of support including financial, logistical and access to material not commercially available. Any individuals named must be given the opportunity to read the paper and approve their inclusion in the acknowledgements before the paper is submitted.

References
A list of references should be provided starting on a new page. Only published references or those genuinely in press should be included.

Tables (including legends to tables)
Tables are to be placed at the end of the manuscript in order of appearance in the text with one table per page. Captions to tables should be short and concise, not exceed one sentence and be on the same page as the table.

Illustrations
These are to be submitted as a separate electronic file for each image.

5. Preparation of manuscripts

Style
References. A standard English dictionary should be used (e.g. Oxford English Dictionary 2007) for spelling or hyphenation of non-medical terms and Dorland's Illustrated Medical Dictionary (WB Saunders, Philadelphia) is recommended for medical terms. A source for general style including grammar, punctuation and capitalisation is the Style manual for authors, editors and printers, Sixth edition 2002 (John Wiley and Sons, Australia).

Numbers. Use numerals for all units of measure and time and for all sets of numbers (e.g. 1 m, 2 hours, 5 years, 4%, 2 of 6 observations). Spell out the numbers one through nine only for general usage (e.g. “we had two opportunities”). Spell out numbers beginning a sentence.

Abbreviations. Abbreviations should be kept to a minimum to avoid confusion with readers who may not be familiar with the subject material. Only standard abbreviations, as listed in a style manual or accepted internationally for use within a subject area, may be used without definition. Terms used frequently within a manuscript may be abbreviated however these should be spelled out at first citation with the abbreviation in parenthesis. Abbreviations in speciality areas must conform to accepted use in that area.

Layout. Headings and sub-headings should be consistent throughout the article and conform to the style used in articles previously published in the journal. No text should be underlined. Prepare the manuscript with double-spacing and allow margins of 2.5 cm.

Tables
Tables should be on separate pages at the end of the paper (following the References section) and be capable of interpretation without reference to the text. They should be numbered consecutively with Arabic numerals (e.g. Table 1). A concise, descriptive caption must be provided for each table. Units in which results are expressed should be given in brackets at the top of each column and not repeated on each line of the table. Ditto signs are not acceptable. An indication should be provided in the manuscript as a guide to indicate where the table should be inserted.

Image files
All images must be submitted as separate files. Images embedded in word processing files are not acceptable. Each image must be referred to in the text and an indication should be provided in the text as to the preferred position of the image. Lettering and lines should be of uniform density and the lines unbroken. Image size and layout should be constructed so that each can be placed within a single column or page width.

At submission all files must satisfy the following criteria for resolution, file format and file size and be
Instructions to Authors

submitted in the actual size to be used. Image width should be constructed to be either one or two column width.

• Halftone images
  600 dpi
• Colour images
  400 dpi (saved as CMYK)
• Images containing text
  600 dpi
• Black and white line art
  1200 dpi
• File types
  TIF, EPS (JPG and GIF are not suitable)
• Figure width (single column)
  -- mm
• Figure width (double column)
  -- mm
• Font size
  8 point (must be readable after reduction)
• Font type
  Times, Times New Roman, Helvetica, Arial
• Line width
  Between 0.5 and 1.0 point

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