



AUSTRALIAN MILITARY MEDICINE

August 1996

Volume 5 Number 2

The Journal of the Australian Military Medicine Association

Australian Military Medicine Association

Statement of Objectives

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

- promoting the study of military medicine
- bringing together those with an interest in military medicine
- disseminating knowledge of military medicine
- publishing and distributing a journal in military medicine
- promoting research in military medicine

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

The Association is totally independent of the Australian Defence Force.

President's Message

Nader Abou-Seif

The highlight of the year for AMMA is always the National Conference. This year is sure to be no different. The Conference organisers, Lydia Stevens and Andy Robertson have put together a varied program of the highest standard. As in past years the quality of papers and presentations is a good reflection of effort and resource available in Australian Military Medicine.

I would also like to take this opportunity to welcome Air Vice Marshal Graeme Moller to the position of Patron of AMMA and to congratulate him on his appointment as Surgeon General of the Australian Defence Force. I hope that he enjoys his period as Patron and that AMMA may continue its growth and development during his patronage. As you know, he succeeds Major General David Rossi who has been Patron since 1993. Major General Rossi has been an untiring advocate and supporter of AMMA from its early days and on behalf of the Council and membership of the Association, I would like to express our thanks to him for his part in the growth of AMMA from a fledgling society to an established national organisation.

Also in this issue, you will find a copy of the AMMA Annual Report. At the previous Annual General Meeting, Council made a commitment to the membership to provide a program of support for military medicine coupled with responsibility and accountability to the membership. I hope that this, the first Annual Report to be circulated prior to the AGM, may be seen to be part of the fulfilment of this promise.

I look forward to meeting as many of you as I can during the conference. As in past years the conference will provide an opportunity to develop friendships and "contacts" in an informal as well as formal setting which is unequalled by any other occasion in the Australian Military Medicine calendar. AMMA remains a great forum for all those with an interest in military medicine - past, present and future. As such, I commend this year's conference to you all. Our previous meetings have all been of a great standard. With your help and support, it will only get better.

Editorial

Credibility

Russ Schedlich

One of the main reasons, if not the only one, for having uniformed military medical services, is so that they can be operationally deployed into areas of conflict. Four of the articles in this issue of *AMM* are directly related to this type of medical support. They cover a wide spectrum of issues that are important in operational medicine - major surgery in the field, common causes of morbidity in a naval environment, aeromedical evacuation and sophisticated ship-based medical facilities.

These articles illustrate the diversity of our activities, and also some of the distinctions between the two services. Under the new Surgeon General, the higher management structure of defence health services is to be subject to a major review. At the same time, moves are afoot to determine how health will fit in to the new Headquarters, Australian Theatre concept, Navy has just completed an internal review of its health service, and the Australian National Audit Office is about to undertake a review of health care delivery.

There are many questions to be answered. Is there to be more integration or less? Is this to be at the

operational level as well as the strategic level? Are uniformed health services cost effective? Should defence health be completely "purple"?

In the June 1993 issue of *AMM*, Tony Austen, opined that defence health should be completely integrated.¹ He used in illustration the Canadian Defence Force health service, where an individual's appointment is related solely to his special skills and ability. Another example is the South African Defence Force, which has a fourth service - Health. Are these good models?

An organisation's effectiveness is influenced by many things. Two that appear relevant in the Defence Force are credibility and authority. The latter should be a simple matter, since the hierarchy of Defence is based on authority as manifest by rank. The former is more complex, but is perhaps the more critical. In the military, credibility is also inextricably enmeshed with the demonstration of rank.

Credibility is defined as "worthy of belief or confidence, trustworthy".² An organisation, which is the

sum of its individuals, must show itself to be worthy of confidence in order to be effective. In the parlance of Total Quality Management, this credibility must be in the eyes of an organisation's customers. For Defence Health, confidence and hence credibility must be earned by its individuals so that it can be transferred to the health organisation. With this organisational credibility the achievement of the desired outcome of effective health support is facilitated.

Further, in the Defence Force there are two categories of credibility - military and professional. Military credibility is that relating to the defence culture and environment. Professional credibility is that relating to the particular specialty of the member. Amongst the "warriors" (or "spear-chuckers"), military and professional credibility are almost synonymous. For the health profession, they are two almost entirely distinct areas, both of which must be mastered.

Defence, government and corporate organisations are no longer the simple pyramids they once were. They consist of many complex, interlinking units. Given the push to integrate the three Services at the strategic and operational headquarters level, it is prudent to ask whether the fundamental single service structure of our health services is still the best.

Medicine is an ever more complex and specialised craft. Advances in knowledge and technology are such as to limit the number of fields at which any one individual can be expert. And from this derives the fundamental issue. Within a 20 or even 30 year career, is it reasonable to expect any health professional to become expert in all the particular fields of medicine that are relevant to military activities? Can one individual be an aviation medicine specialist, an underwater

medicine specialist, a combat surgeon, an intensivist, an anaesthetist, and so on, and be up to world standard in all of these? Can he or she achieve professional credibility in all these fields? Clearly not.

And so to return to the articles. They illustrate the real issue, and that is that health support requirements on land, at sea, and in the air are fundamentally different. The environment, the hazards, the nature of illnesses, the lines of communication, and the facilities available are so diverse, that the only way a person can become an expert in naval, army or air force health is to spend the vast bulk of his career working in that environment. In this way, professional skills and credibility are attained.

Military credibility is also important. Would an army unit commanding officer feel intuitively confident that the advice given him by an air force or navy health professional is based on a full understanding of the issues involved in the problem? Probably not, because he would be, with some justification, sceptical of that person's knowledge of the army, its environment, and operational constraints. In a headquarters environment, this is less of a problem, provided the commander is confident that the adviser has ready access to appropriately skilled professionals from the other Services.

There is no doubt that Defence, and also its health services, have gained considerably from integration of some of its functions. However, in planning for the future, sight must not be lost of the unique nature of each of the Services, and the importance of a dual outlook - Single Service and Joint - in developing the credibility that will sustain the health services into the future.

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The views expressed in this journal are those of the authors and do not reflect in any way official Defence Force policy or the views of the Surgeon General, Australian Defence Force or any military authority.

Original Articles

Arch aortography and aortic trauma in Rwanda: Case report

J.V. Rosenfeld,¹ J. Harding,² D. Evans³

Introduction

Thoracic aortic rupture may follow a heavy fall or acute deceleration chest injury. It is difficult to diagnose and is suspected when there is a widened mediastinum on chest x-ray and a high index of clinical suspicion. Traumatic rupture of the ascending aorta usually causes sudden death whereas 90% of the patients reaching the operating room have a rupture at the isthmus of the aortic arch.¹ Approximately 80% of cases have an acute presentation whereas 15-18% of cases have a delayed presentation.¹

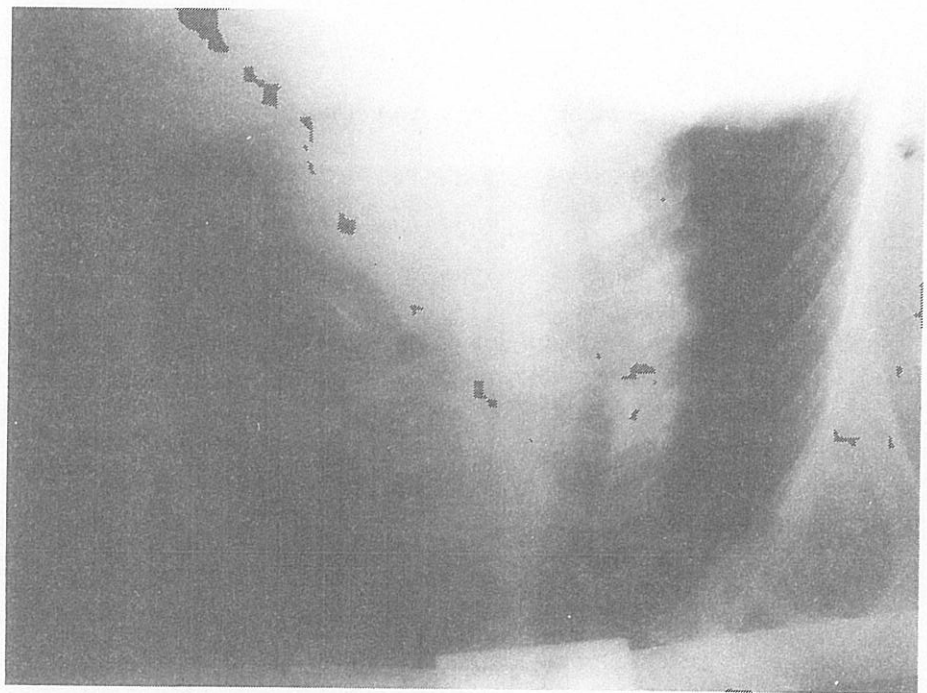
performed an arch aortogram via a femoral arteriotomy under local anaesthesia using a modified Fogarty catheter as no formal angiography catheters were available. The balloon was cut off the Fogarty and a side opening made at the end of the catheter. Fifty millilitres of lopamidol contrast medium in five 10ml syringes with one syringe per radiograph was injected under pressure and rapid manual film exchange performed of the thoracic aortic arch region. It proved very difficult to inject the viscous contrast medium through the

Case Report

A 69 year old Italian man was involved in a motor vehicle accident, suffering multiple trauma including a left haemo-pneumothorax, surgical emphysema, shock lung, fractured right neck of femur, crush fractures of the bodies of T6-8, burst fracture of L2, and multiple fractured ribs posteriorly and laterally. He was evacuated by road to the Australian UN hospital in Kigali and received an intercostal tube on the left side, paralysis, sedation and intermittent positive pressure ventilation. A thoracic epidural catheter was inserted for analgesia and he was noted on supine chest x-ray to have a widened mediastinum (Figure 1). It was not technically feasible to sit him up.

In view of the severe deceleration involved in the mechanism of this injury and the multiple chest injuries including fractured posterior ribs and fractured vertebral bodies with a widened mediastinum, it was imperative that a ruptured aortic arch be excluded. We thus

Figure 1. Supine chest x-ray of case, showing widened mediastinum



¹ Jeffrey Rosenfeld is the Director of Neurosurgery, Royal Children's Hospital; and Deputy Director of Neurosurgery, the Royal Melbourne Hospital. He is doubly qualified in general and neurosurgery. He is a Major, RAAMC, and currently OC, of the Sixth Forward Surgical Team. He was a consultant surgeon in the UNAMIR II Rwanda 1995.

² Jackson Harding is an intensive care and anaesthetic registrar at the Royal Adelaide Hospital and is currently a Captain, Medical Officer, RAAMC attached to 3 Forward General Hospital. He was a consultant intensivist to the UNAMIR II Rwanda 1995.

³ Dennis Evans is a Lieutenant RAAMC Radiographer, currently serving with the Med Coy 3 BASB, Townsville, and was the radiographer for the second contingent of UNAMIR, Rwanda 1995.

Fogarty catheter and only limited films were obtained, but on studying these and subtraction films, it was reasonably clear that the aortic arch was intact. (Figure 2). Subtraction was performed manually via a medilite copying/subtraction unit. The x-ray machine was a Siemens prime-X and the film/screen combination was Kodak regular speed. The patient suffered no ill-effect from the arteriotomy and retained good circulation distally. He was later transferred by an aero-medical team to a hospital in Rome where he gradually improved and no subsequent aortic rupture ensued.

Discussion

The aorta usually ruptures at or near the aortic attachment of the ligamentum arteriosum (isthmus), hence, the need to image the arch and the first part of the descending aorta.² The rupture may be total at first or only involve the intima and media as a circumferential tear, with associated contained haematoma. Serial chest films may be required to identify an increasing haematoma. Of 171 patients with isolated aortic rupture, 20% survived the initial injury, whereas only 4% survived even temporarily if cardiac injury was associated.³ The extent of rupture did not affect survival significantly.³ Associated limb and spinal fractures are commonly associated, as in our case.

Aortic rupture should be considered in all patients with thoraco-lumbar fracture. Chest injury may be minimal.³ The patient may complain of severe back

pain, dyspnoea, dysphagia, with worsening hoarseness. Our patient was intubated and paralysed so that history was unavailable. The patient may become dyspnoeic, hypotensive, cyanotic, tachycardic, and develop haemoptysis. None of these signs occurred in our patient. Differential pulse pressure between the arms and legs is not commonly found.¹

The most important early radiological sign is mediastinal widening,⁴ and this is often associated with a haemothorax, usually on the left side. Electrocardiograph (ECG) and blood gases should be performed. Approximately 30% of patients with acute aortic tear secondary to blunt chest injury may have a normal chest x-ray.⁵

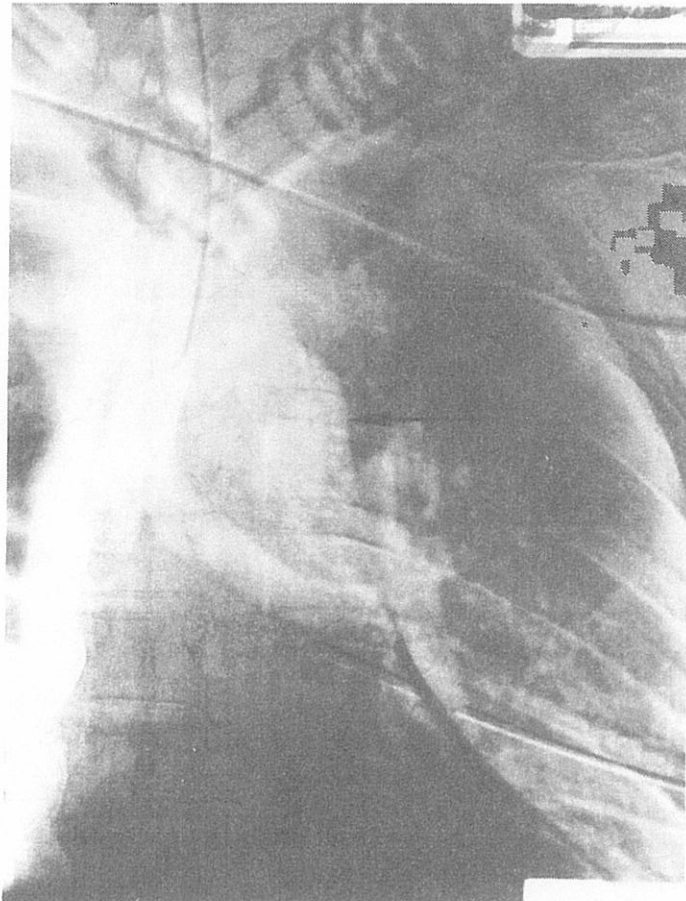
The arch aortogram is the definitive method of diagnosis. The method of arch aortography we employed was makeshift and made use of available materials. No angiography catheters were available. A Fogarty catheter with the balloon removed and passed via a femoral artery cut down was the method chosen. Although this placed the catheter well into the arch great force was required to inject the contrast because of the narrow catheter lumen, a long length of catheter, and a small distal opening. A hole was cut in the side of the catheter tip but even this did not allow for an adequate flow of contrast. The high viscosity of the angiographic contrast medium also prohibited adequate injection of contrast.

Ideally, angiogram catheters should be available in the field hospital. These can also be used to investigate peripheral arterial trauma prior to surgery. Although direct carotid puncture is a much shorter route to the arch and higher flow rates could be obtained on injection of contrast, there is a significant risk of trauma to the carotid, particularly dissection, following a direct carotid puncture. The risk increases in a patient of 69 years. We believe that the complication risk would be higher if carotid puncture were performed in a remote setting, and therefore do not recommend this method. We suggest that angiography catheters should be available for this procedure rather than modifying Fogarty catheters which are not designed for aortography. Some films of the aortic arch were obtained in our case, but the contrast detail was too light. The concentration of contrast in the aortic arch was too low at the time the x-ray films were taken.

The use of transoesophageal echocardiography to diagnose aortic dissection has been reported,⁶ but is not considered suitable for use in the field, because it is operator dependent and the apparatus is not standard equipment in the field.

Repair of the aortic arch could have proceeded by a cross-clamping technique. An aortic perforation by a sharp rib end may be repaired primarily. However, a dacron graft is often required to bridge a major gap which is often difficult to appose primarily because the ends of the aorta tend to retract due to elastic recoil of the tissue in the wall. A major complication of this type of aortic repair is acute paraplegia due to interference with spinal cord blood supply. Some authorities have argued that one cannot attempt an aortic rupture repair without cardiac bypass, so that the paraplegia risk is minimal; but even if a cardiac bypass is used, paraplegia may still occur. We believe that if cardiac bypass is

Figure 2. Arch aortography using Fogarty catheter for contrast injection



unavailable, such as in a remote location (eg Rwanda), repair should still be attempted because the patient's survival will be minimal without definitive repair of the aortic rupture in the early stages. Prolonged hypotension should be avoided as this is a potent risk factor for paraplegia. Conservative operations (patch grafts, lateral aortorrhaphy, replacement of acute dissections and re-attachment of intercostal vessels) all help to avoid paraplegia.² Appelbaum *et al* preferred simple cross clamping as the method of choice during aortic repair.⁵ Paraplegia only occurred in this series where the distal aorta was not perfused.⁵ More recently, Feliciano and Graham also recommend a simple cross clamping technique.⁷ A simple shunt bypass above and below the cross clamping may protect the spinal cord if the clamp time is likely to be prolonged.^{1,8} This type of bypass can be achieved technically in a remote location and does not require cardiac bypass.

It should be emphasised that in a situation where mass casualties are arriving for triage, potential aortic rupture would take a low priority.

Conclusion

In a remote military health facility treating patients with possible aortic rupture, serial chest x-rays should be obtained, if possible in the erect position. Arch aortogram should be attempted via the femoral artery puncture using angiography catheters. Repair of the aorta with simple cross clamp technique, with or without simple aortic bypass if prolonged clamp time is likely or if the patient is hypotensive, is the recommended repair method. Dacron tube grafts should be available in the field hospital to be able to repair the ends of the aorta which have retracted.

These advanced diagnostic and therapeutic techniques fall outside the doctrinal considerations for level three care during war. The surgical and medical experience in Rwanda was unique and went well beyond level 3 support as our case demonstrates. We must however be careful not to draw any doctrinal conclusions from this example.

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Presentations of fungal infections on a warship in equatorial climates, and the effect of changing clothing more than once daily. An initial report

B.T. Fitzgerald¹

Abstract

A prospective study was conducted to assess the proposal that there was medical value in changing into night clothing during cruising watches at sea. It was suggested that the change of clothing would contribute to an increase in hygiene and a decrease in the risk of fungal skin infections. Numbers of personnel (n=2) with these presentations

¹ Ben Fitzgerald is an Australian Naval doctor educated at the University of Queensland. He trained at the Royal Brisbane Hospital before commencing work with the RAN in 1993. He has worked as a general practitioner and in diving and underwater medicine, holding a Diploma of Diving and Hyperbaric Medicine. He has spent the last 18 months in the Fleet, deploying in various ships during that time.

to the sickbay in HMAS MELBOURNE (an Australian guided missile frigate), were registered in a period during cruising watches (when night clothing was worn from 6pm). This was compared to an equal period when the ship's company were in defence watches, wearing combat coveralls and boots throughout their day (n=17). This brief study showed a very significant ($p<0.01$) increase in the number of mycotic presentations during defence watches. It is suggested that this provides medical support for the concept of changing clothing and/or showering during the day. This would be achieved by the current policy of changing to night clothing, when operationally feasible.

Introduction

This study was designed to assess the value of changing to night clothing on an Australian warship, in equatorial waters. It had been argued that changing to night clothing was beneficial from a medical perspective. There was a perceived increase in hygiene and anecdotally most sailors also shower before changing. It was proposed that this would result in a lower risk of fungal skin infections. It was decided to use fungal presentations to the sickbay as a measure of this hypothesis.

Method

Two surveys were conducted. The first was a prospective study of all presumed fungal infections presenting during an 18 day period during cruising watches. In this arm of the trial, all personnel not on watch were required to change to night clothing from 6pm. The second was a prospective study of all presumed fungal presentations during an 18 day period during defence watches. Dress throughout defence watches was combat coveralls (proban overalls) and boots, with antilash carried.

Subjects

Subjects were all ship's company who presented to the sickbay with skin lesions, that were subsequently presumptively diagnosed as having a fungal aetiology. The complement for this deployment was 224, five of whom were female. Personnel were aged from 18 to 43. There were no female presentations in this study.

Results

The data for the cruising watches group are displayed in Table 1. The data for the defence watches group are displayed in Table 2. These data show a significant difference ($p<0.01$ on T-test), between the number of presentations in each group.

Table 1. Presentations of presumed fungal infections during cruising watches.

Trial period (days)	Number of presentations	Mean daily presentations
18	2	0.11

Table 2 Presentations of presumed fungal infections during defence watches.

Trial period (days)	Number of presentations	Mean daily presentations
18	17	0.94

Discussion

The results show a significant increase in the number of fungal skin presentations during defence watches. This would support the concept of showering and changing clothing, eg. to night clothing, during cruising watches when feasible from an operational perspective. It would also suggest that sickbay staff should substantially increase stores of anti-fungal medications in preparation for situations where prolonged periods of defence watches are programmed or possible. This is especially the case when operating in equatorial waters.

Development of fungal skin infections is dependent on many factors. Warm, moist conditions are most favourable. Infections tend to be more common in summer. Clothing further enhances conditions especially when fitted tightly. The length of time that these conditions persist for is another significant factor. Trauma provides a portal of entry. Obesity and many medical diseases also predispose to mycotic colonisation.^{1,2} These last factors are less likely in sailors at sea, who are required to be fit for posting.

There are flaws in this study. The risk of infection increases the longer that personnel are exposed to these conditions.^{1,2} The higher number seen in the defence watches component of the trial may be a reflection of this increased risk (as it was conducted as a second trial). The numbers seen were small, as was the time frame of the study (constrained by the operational role of the ship). In cruising watches, some personnel wear shorts and sandals as part of daytime rig, decreasing the risk of development further.

It is intended to repeat the study in the latter stages of the deployment. This will allow a longer comparison and will permit presentations during cruising watches to be evaluated after a period of defence watches.

The very significant statistical contrast strongly suggests that the rate of fungal presentations between these periods is different. Both trials were under equatorial conditions, ie. a hot and humid environment. Despite the above suggested weaknesses, the most obvious change in environment is the change of uniform, with increased likelihood of personnel showering. This suggests that changing attire and/or showering decreases the risk of fungal infection in equatorial conditions on board an Australian warship. The current policy of changing to night clothing during cruising watches is therefore supported from a hygienic viewpoint.

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An Australian medical perspective on aeromedical evacuation and casualty management during the Somali war¹

A.M. Robins²

Introduction

Australian Service Contingent 4, UNOSOM II was the last to serve as part of the United Nations force in Somalia. They withdrew from Mogadishu on 23 November 1994 after two years of continuous Australian involvement in this mission.

Somalia is a boomerang shaped state located on the "Horn of Africa". It was the result of the union of former British and Italian colonies. Its land mass is 637,660 square kilometres and it is bordered by the Gulf of Aden in the north and the Indian Ocean to the East. The terrain is mainly flat and undulating desert and dry savanna. The climate varies between tropical and arid and is influenced by two monsoons with a temperature range of 25 to 35°C.

The United Nations became involved in Somalia in response to the worsening humanitarian situation. Many Somalis were affected by the drought and civil war and as many as two million had been displaced as refugees into Kenya and Ethiopia.

As Regimental Medical Officer (RMO), I deployed with ASC 4 as part of this UN operation. I was directly responsible to the Commander of the Australian Service Contingent (COMASC) for the maintenance of health and out patient treatment of illness and injury within the contingent. I worked out of the Regimented Aid Posts (RAPs) at both accommodation camps and raised general medical and public health issues before contingent members on a daily basis. Other duties were performed when specified by COMASC, these included acting as escort officer for visitors and representing the contingent at functions.

ASC 4 comprised 67 members. This included personnel in the U3 Air Cell, Joint Movement Control and MOVCON A at the embassy compound, and Airfield Management, Air Traffic and Security Elements at

the Airfield compound. Accommodation at the Embassy was in a converted car workshop, while at the Airfield it was in MASH 4077 style tents left by the US State Department.

Health Risks

The main health risks to Australian personnel were from stray rounds, non-battle injuries and disease. Stray rounds were generated from inter-clan conflicts and were noted in all work and recreation areas used by ASC members. There was also risk of injury from the unauthorised discharge of weapons. Non-battle injuries included lacerations and sporting musculoskeletal sprains. Of the few injuries related to the work place, most occurred in the MOVCON cell handling cargo at the airfield. The major infectious disease risks were from food, waterborne organisms and malaria. Other health risks included exposure to heat and dehydration as well as exposure to chemicals and dangerous cargoes.

Australian Medical Facilities

Two RAPs were set up to provide Level One medical care for our contingent, one at each Australian camp. The principal equipment provided was a Thomas Pack at each venue and one Oxyviva. There was a small selection of surgical instruments, a diagnostic set, sphygmomanometer and a thermometer. No electronic monitoring equipment was available. A small mass casualty clearing station was also established at the Airfield facility.

There were four Patrol Medics included in the Security Element. They each carried their own medic kits containing diagnostic, surgical, and pharmacological equipment. These medics displayed a high level of training, which combined with their other skills to pro-

¹ Presented at the Royal Australian Naval Health Services' Conference, HMAS Albatross, 1995

² Tony Robins served for several years as a medical officer in the Royal Australian Navy, leaving in 1996 to enter general practice in Perth.

vide medical flexibility for the contingent. Their presence meant both camps had medical coverage 24 hours a day. It also meant our contingent could be medically independent up to a certain level, especially in the event of a mass casualty situation.

UNOSOM Medical Services

Even though RMO ASC 4 was a position responsible to COMASC, I also assisted the UNOSOM Chief Medical Officer (CMO) on a voluntary basis. My predecessor and I principally advised the CMO on rotary and fixed wing tactical aeromedical evacuation (AME) and assisted in the role of MEDEVAC Medical Officer. Packed cells were supplied from Aldershot in the UK on a monthly basis and were sorted and distributed to the UN Level Three medical facilities with our help.

The medical services provided by UNOSOM for our contingent included an ambulance, a rotary and fixed wing AME capability, and several hospital facilities. We mostly used the Level Three Pakistani Hospital at the US Embassy compound for referrals, blood testing and radiology.

Other than ourselves, contingents from Bangladesh, Botswana, Malaysia, Nepal, Nigeria and Zimbabwe each provided at least one Medical Officer and a Level One facility. Level Two facilities were provided at the airport by the Egyptian Brigade and outside the Embassy by the Pakistani Brigade Field Hospital. Level Three hospitals were provided at the airfield by the 50th Romanian Field Hospital and within the Embassy compound by the Pakistani UNOSOM Hospital. Level Four referral was made to hospitals in Nairobi, Kenya.

Specialties represented in Somalia included general, orthopaedic, ENT and neurosurgery. There were general physicians as well as neurologists, dermatologists, obstetricians and paediatricians. Importantly, there were no psychiatric or physiotherapy services available.

UNOSOM also provided a central medical store run by a private US contractor and located within the Embassy compound. Many of the medications had been left by the original German pharmacists two years earlier and some were expired. Most were labelled in German or Arabic and it was often time consuming to determine their generic origin. Another important consideration was that many of the preparations were made up to different concentrations from those found in Australia. A major example was thiopentone which was only available in one gram vials.

Medical communication with UNOSOM was by landline telephone or Motorola MTS 2000 radio network. The radio network included all the MOs, hospitals and the AME pilots. This network was reliable within the Mogadishu area, but did not extend beyond to the remote townships.

Aeromedical Evacuation

Initially, AME was under the command and control of the US Marines when UNOSOM II began. After their departure, Canadian Helicopters supplied two civilian Bell 212s and Evergreen supplied two Gates Lear Jets which were originally coordinated by a Canadian and

then a New Zealand Flight Nurse. This role was further passed to the ASC RMOs.

The 212s flew dual pilot IFR missions and could seat up to nine passengers. They could be reconfigured on the ground or in flight for three stretchers and four seated patients. They had no in-built oxygen, suction or other medical systems. One Lear jet was permanently based in Mogadishu. The other was based in Nairobi. The Lear also flew dual pilot IFR and could pressurise to sea level. Pressurisation was a consideration as Nairobi is 5500 feet above mean sea level. These jets could seat six persons or have a customised stretcher fitted at the expense of two seats.

The UN did not provide any electronic monitoring equipment for use in their AME operations. On one occasion I was able to borrow the only PROPAQ (transportable medical monitor) in country from the Pakistani Hospital for the transfer of one of their unconscious officers. All the other transfers were monitored manually. An inflight proforma was developed to supplement the NSW Emergency Transfer Form used to record patient parameters in-flight.

During the deployment, I flew more than 80 hours in rotary and fixed wing aircraft in support of AME. During this time, 47 patients were evacuated. Of these, 22 were Somali (most with gunshot wounds and about 50% less than 16 years of age), 10 Pakistani, five Nigerian, four Zimbabwean, two civilian and one each of Australian, New Zealand, Indian and Egyptian origin. Four transfers used the Lear Jet for transfer to Nairobi and two of these patients were unconscious. One who was intubated had an intra-cerebral haemorrhage. Another had a pneumothorax and bronchopleural fistula as a complication of tuberculosis. The largest casualty evacuations occurred on 18 August when six Somali children were evacuated after their one year old sister trod on a land mine and they received collateral injury, and on 29 September when 13 Somalis were evacuated after receiving gunshot wounds following an altercation with Indian UNOSOM troops. Most of these casualties were children.

A further MEDEVAC activity was the weekly training of other contingents in AME. Each session took approximately 90 minutes and included a Bell 212 safety brief, a lecture on patient preparation and a practical exercise in patient loading and unloading. An English language handout was distributed at the end of each session.

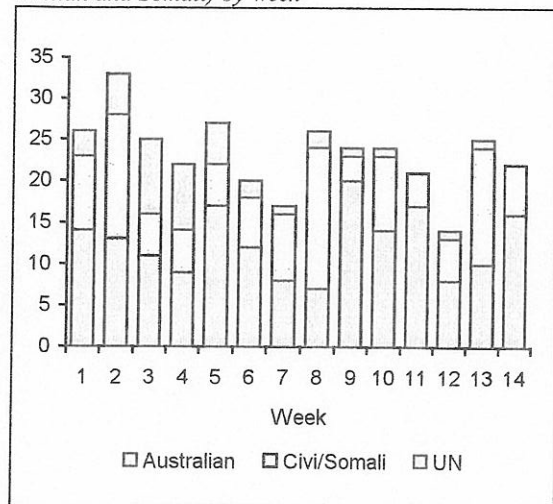
Other RMO Medical Activities

The RMO was involved in humanitarian issues that went beyond Somali MEDEVAC. We undertook the treatment of Somali workers, both our own and those working for other contingents. Other activities included visits to local orphanages in Mogadishu and Baidoa. The Baidoa orphanage was originally adopted by 1 RAR when they first deployed to Somalia.

RMO ASC 4 saw non-contingent patients on request. These included members of the New Zealand contingent staff from Canadian Helicopters, SSI Industries and Morris Catering. I acted as Flight Surgeon for Canadian Helicopters and undertook the medical preparations of their crews for the deployment to Mozambique for the government elections in October 1994.

Figure 1 shows the presentations in each week between the dates of 4 August and 11 November 1994 for Australian personnel, civilians and Somalis. An additional 67 medicals were performed prior to repatriation but are not included.

Figure 1. ASC 4 - Total presentations (Australian, UN, civilian and Somali) by week



A further breakdown of the Australian presentations by disease category is shown below in Figure 2.

Two clinical meetings were convened during the deployment. The first was in August at the Romanian Hospital and the second in November at the Indian

Hospital in Baidoa. Papers were presented at both meetings which dealt with patient profiles and interesting cases seen by each facility during their time in Somalia.

During August, there was an incident in which an Australian shot two Somalis while protecting Australian assets. A critical incident debrief was held with all the primary personnel involved. Follow up observation suggests that all those debriefed have been able to reconcile the event and require no further interventions at this time.

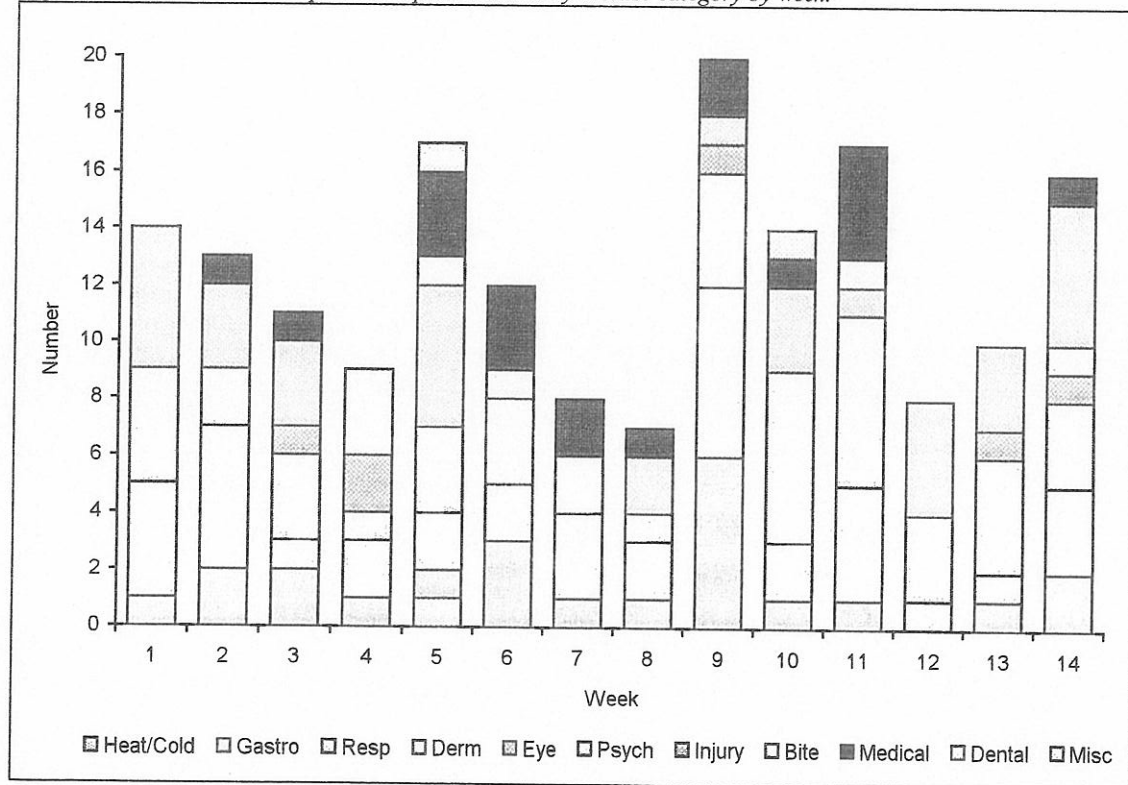
Conclusion

This deployment has provided Australian RMOs with a wide range of medical experiences, especially in the fields of AME and trauma casualty management. Despite this, political agendas sometimes frustrated medical planning and advice, especially in the UN. Good working relationships between medical personnel and other workers within the UN structure often transcended bureaucracy for the common good.

Australian medical help for the Somali people probably gave comfort and helped the effort to save many casualties.

Exposure to trauma medicine in a war zone has been a challenging experience and I consider it a privilege to have contributed to the service of peace with UNOSOM in Somalia.

Figure 2. ASC 4 - Australian personnel presentations by disease category by week.



Clinical Management

Disorders of the eye. Initial management and transport of patients with perforating eye injuries¹

J. Colvin², S. Langford³, D. Emonson⁴, M. Kister⁵

Introduction

The first 24 hours are critical for a good surgical result from perforating eye injuries. The basic principles of initial management and transfer include prevention of vomiting, pain and infection, and avoidance of further injury. Where air transport is necessary it must be with the cabin altitude at sea level, or as low as is safe. Surgical repair should be undertaken as promptly as is practical.

Perforating eye injuries can occur as isolated sporting or workplace injuries, or in association with facial or multiple trauma. In a recent Swedish study, 37% of perforating injuries were occupational, 29% domestic and 11% occurred due to sport.¹ In Norway, 19% of ocular trauma in paediatric patients was perforating.²

Fong recently reported on sports-related eye injuries from a cross-sectional survey of ocular trauma at the Royal Victorian Eye and Ear Hospital over two years.³ While only 11 patients had sports-related perforating injuries, 7 of 33 were classed as serious injuries, and 8 of 22 required major surgery.

Perforating injuries from all sources account for a significant proportion of eye injuries which require admission and major surgery, and a high level of ocular morbidity. Use of polycarbonate lenses in spectacles instead of glass and lap sash seat belts in motor vehicles have reduced the incidence of perforating injury. Nevertheless, they remain an important (and often preventable) cause of blindness in Australia.

An optimal surgical result can be expected if micro-surgical repair is performed promptly after injury. Surgical management is usually only available in major centres, so patients sustaining penetrating injuries in rural and remote areas will require transport, often over long distances.

Effective initial treatment should be possible whether patients present at regional hospitals, rural nursing posts or in remote communities which have access to Royal Flying Doctor Service medical chests. The recommendations below take account of these differing situations.

Perforating eye injuries require initial treatment to relieve anxiety and pain, and to prevent infection and vomiting. Appropriate dressing of the eye will be required and a suitable method of transport must be arranged.

Resuscitation

If patients have multiple injuries, management of the airway and circulatory support take priority. Shock should be treated with the patient supine and feet elevated. Intravenous access should be established for administration of fluids and drugs. Since the patient will require surgery, they should be fasted.

Ocular injuries must be considered in patients with any facial injuries. Perforating eye injuries and preservation of sight warrant priority over conditions which are not life-threatening.

Management of the eye

Examination

If a perforating eye injury is apparent, no further examination of the eye should be made until the patient is seen by an ophthalmic surgeon. Unnecessary examination increases the risk of loss of ocular contents and infection.

Foreign bodies

Any intraocular or intraorbital foreign bodies should not be removed as this will result in the immediate loss of

¹ Reprinted from *Australian Family Physician* 1995; 24(6):1017-20

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intraocular contents, rendering a potential salvageable eye inoperable and visually useless.

Ointments and drops

Never instil any eye ointment or eye drops into a perforating ocular injury. The ointment base and preservatives are incompatible with the intraocular contents. If a local anaesthetic drop is needed to permit examination, it must be unidose and non-preserved, (such as "Minims"). Local anaesthetic must never be used as treatment. It is strongly recommended that no local treatment of any kind be attempted.

Eye Movements

Restriction of eye movements is mandatory to provide adequate rest to the injured organ. This is best achieved by sterile eye pads - one over each eye. These should be lightly applied. Avoid any firm pressure over the injured eye.

Medications

Sedation

An anxiolytic such as diazepam can be useful. This can be given intramuscularly but is better titrated slowly intravenously before transport. Promethazine 25mg given orally or intramuscularly may also be useful as sedation and is an effective anti-emetic for motion sickness.

Anti-emetic

Prevention of vomiting is essential to prevent rises in intraocular pressure and loss of intraocular contents.

For an adult, prochlorperazine 12.5mg given by deep intramuscular injection or intravenously, is an effective anti-emetic with some efficacy in motion sickness. Metoclopramide is a useful anti-emetic in general use but has no clear benefits in motion sickness or other labyrinthine disorders, so is not recommended.⁴

Hyoscine hydrobromide (scopolamine) is a highly effective anti-emetic for motion sickness available in oral form, transdermal patches and ampoules for parenteral use. Transdermal patches have a long duration of action (72 hours) but need to be applied 5 to 6 hours before travel to be effective. Hyoscine tablets 0.3mg or hyoscine injection 0.4mg intramuscularly or intravenously, is effective if given half an hour before travel. Anti-cholinergic side effects including dry mouth and mild sedation may occur.

All anti-emetics are best given at least half an hour before travel and well prior to analgesia. They are usually less effective once vomiting has started. A range of other drugs have been tried as prophylaxis against motion sickness.

Analgesia

Perforating eye injuries are usually not very painful, and large doses of narcotic analgesia should be avoided to prevent vomiting. Traditionally pethidine has been used as the analgesic of choice for these patients. The perceived difference in emesis and pupillary constriction compared with morphine is probably not significant,

with all opioids having a similar profile of adverse effects.

Analgesia is best obtained by small, intermittent, intravenous doses, such as pethidine hydrochloride diluted with saline, 20-25mg intravenously in an adult male, with further aliquots titrated as required for pain relief.

Any opioid analgesia should be administered with an anti-emetic, as vomiting adversely affects intraocular pressure.

Antibiotics

Prevention of infection is essential for a good surgical result. Ceftriaxone sodium given intravenously has a broad spectrum and good penetration of the anterior chamber and vitreous, necessary for perforating eye injuries. A single 1g dose has a duration of action of up to 24 hours. Alternatively commence cefotaxime sodium 1g intravenously or gentamicin sulphate 120mg intravenously prior to transport. In remote areas, if these agents are not available, treatment should be commenced with oral or parenteral flucloxacillin 1g or amoxycillin 1g. Use appropriate paediatric doses in children.

Tetanus

Tetanus immunoprophylaxis is necessary in perforating injuries and should be given in accordance with current guidelines.⁵

RFDS medical chests

Royal Flying Doctor Service medical chests are distributed widely throughout remote Australia. Chest items which may be used for management of these patients are shown in Table 1.

Table 1. Royal Flying Doctor Service medical chest items useful for perforating eye injuries

Item	Description
97	Prochlorperazine injection 12.5mg
98	Diazepam injection 10 mg
137	Pethidine injection 100 mg
153	Flucloxacillin caps 250 mg x 24
156	Amoxycillin/clavulanate 250/125mg x 15
204	Eye pads sterile
216	Adhesive tape

Oxygen

The retina has the highest oxygen demand of any organ in the body and hypoxia will aggravate any eye injury. Ideally all eye injuries should receive humidified oxygen through a simple face mask at 4 litres per minute. A full size oxygen mask can be cut down to half its original size to avoid it pressing on the injured eye.

Oxygen therapy should be continued during transport and until surgery.

Anaesthesia

The patient with a perforating eye injury and multiple other injuries poses a problem for anaesthesia and transport where intubation and ventilation are required. Increased intraocular pressure may be caused by exter-

nal forces such as inadvertent pressure from a face mask or other manipulations during induction.

Rises in intraocular pressure may occur from use of suxamethonium. Inadequate relaxation, coughing, straining or vomiting will result in venous congestion and raised intraocular pressure, as will respiratory obstruction, CO₂ retention, hypoxia, and pressor responses to laryngoscopy and intubation.

Techniques to limit the increase in intraocular pressure include pre-treatment with a small dose of non-depolarising relaxant before induction with suxamethonium, or induction with a more rapid non-depolarising relaxant such as vecuronium with use of cricoid pressure.

Transport

Patients should be operated upon as soon as practical. However, speed is not the only factor to consider and the best possible means of transportation for the patient should be used. If road transportation is indicated, then it should be steady and comfortable. The patient must be semi-reclining, supine, on a stretcher, with head elevation of 10-20° and firmly and securely restrained. The feet must face the rear of the transporting vehicle. Conditions which may induce nausea and vomiting must be avoided.

Aeromedical evacuation

Aeromedical services should be brought as near as possible to the patient to avoid unnecessary road travel. Changes in flight which may adversely effect these patients include:

- decreased partial pressure of oxygen (altitude hypoxia),
- expansion of trapped gas (dysbarism),
- noise and vibration,
- acceleration, and
- low cabin humidity

Hypoxia

The decrease in partial pressure of oxygen at altitude will cause dilatation of retinal and choroidal vessels in injured eyes and may cause intraocular haemorrhage if this has not occurred already. Patients should receive oxygen as soon as possible after injury and during flight to compensate for altitude hypoxia.

Intraocular air

It should be assumed that air is present inside any perforated globe. This will expand with altitude and decreased barometric pressure causing an increase in intraocular pressure.⁶ The majority of dedicated aeromedical aircraft in Australia today are pressurised. They should be operated to maintain a sea level cabin altitude for the duration of the flight.

Where pressurised aircraft are not available and no other reasonable means of transport can be arranged, the aircraft should fly at the lowest reasonable altitude commensurate with the safe operation of the aircraft and minimal risk to other passengers or crew.

Noise and vibration

High ambient noise levels interfere with communication with patients and severe vibration or turbulence may induce further intraocular haemorrhage. Ear plugs or head sets can be used to reduce noise and aid communication with attendants. An appropriate course and flight profile should reduce turbulence. When turbulent conditions are present in the daytime, particularly in summer, the patient might be more safely transported at night when atmospheric conditions are more favourable for a smooth flight. This will depend on the availability of airstrips suitable for night operations.

Acceleration

Acceleration can be pronounced in some aircraft, especially in short field take-offs and landings. The patient should be adequately restrained and placed supine on a stretcher as near as possible to the centre of gravity of the aircraft, with feet facing the tail. Head elevation of 10-20° helps reduce rises in intraocular pressure during different phases of flight.

Humidity

Low relative humidity causes drying of mucus membranes and can cause dehydration of the cornea. This can be prevented by ensuring the eyelids are closed. Humidified oxygen is desirable but unfortunately not always available.

General considerations

A qualified nurse or medical practitioner should accompany the patient to administer drugs and ensure a comfortable flight with particular attention to nausea and vomiting.

Patients with bilateral eye pads need explanations of unusual sounds or movements, orientation to the aircraft and constant reassurance.

Should the patient not tolerate both eyes padded, then removal of the pad from the uninjured eye is acceptable, with explanation that both eyes are best kept absolutely still, and that opening the uninjured eye should be resisted.

If an absolute sea level cabin altitude is not maintained, changes in atmospheric pressure occurring with ascent and descent will require clearing of the middle ear. The middle ear normally clears passively on ascent. During descent clearing the middle ear should be attempted initially by swallowing, yawning or jaw movement. Manoeuvres that increase intraocular pressure, such as the Valsalva, should be avoided.

Responsibility

The referring medical practitioner is responsible for ensuring the appropriate initial management and choice of transport until care of the patient is handed over to another practitioner. Transport personnel should be briefed fully on the patient's condition, possible complications and correct management.

Advice

Communicate clearly with the receiving hospital, speaking whenever possible to the designated surgeon who is to take ultimate responsibility for the patient. Describe in detail the exact nature of the injury, how it was caused and when it occurred. Document these details and any treatment given for the benefit of the receiving hospital staff.

Conclusion

Correct initial management, appropriate transport and prompt definitive surgery will ensure an optimal outcome for patients with perforating eye injury, wherever these may occur in Australia.

Acknowledgments

We wish to thank Associate Professor Hector Maclean for advice on antibiotic usage in eye injuries and Drs Rob Liddell, Joe Reich and Bud Ferguson for helpful comments on the manuscript.

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History

Reminiscences: Changi 1942-45¹

J.G.G. White²

In June 1940 I was appointed deputy to Colonel A.P. Derham who commanded the medical services of the 8th Australian Division. He had given outstanding service in the First World War as a combatant officer, being one of the first Australian officers decorated at Gallipoli and serving as a Staff Captain to an Australian Brigade in France before being sent back to Australia to complete the final year of his medical course. He completed this and was returning to France when the war ended. When I became his deputy, he was an honorary physician at the now Royal Children's Hospital, Melbourne, and, incidentally, father of David, now Sir David, until recently Vice-Chancellor of the University of Melbourne. In the years to follow he was to become my greatest friend: his outstanding courage, foresight, absolute honesty and great leadership qualities were always an example to those who served under him. I remained his deputy until September 1941, when I was promoted and given the post of administering the lines of communication and base medical units. My place as deputy to Colonel Derham was taken by Major Bruce Anderson and I need not extol his many virtues. He was an outstanding officer and apart from his military acumen he was in every sense of the word a great doctor. I shall always be grateful to and remember affectionately the great help and loyal support he gave me in many difficult times. I should like this paper to be regarded as a tribute to Alfred Derham and Bruce Anderson, and the other medical officers and men of the allied medical services who experienced the disastrous results of a military catastrophe and who have since passed on.

I shall consider some of the problems which arose as a result of our imprisonment and indicate how we tried to deal with them.¹ Singapore fell on 15 February 1942, and the following morning I reported to Brigadier C.H. Stringer at Fort Canning, the headquarters of Malaya Command. Brigadier Stringer commanded the Allied Military Medical Services and I found him in conference with Colonel Sekiguchi, chief

medical officer of the Japanese forces commanded by General Yamashita, and two junior Japanese combatant officers. They were demanding, in a menacing way, an accurate figure of the numbers of sick and wounded and their exact locations together with the number of medical personnel caring for them. When informed that there were approximately 12,000 sick and wounded, Sekiguchi ordered that all British were to be concentrated in British medical units, Indians in Indian medical units and the Australians in theirs. This was to be completed by the night of the 17th and then they were to be shifted, all 12,000 of them, to their respective prisoner of war areas - the British to Robert Barracks, the Australians to Selerang Barracks, both in the Changi area, and the Indians to Bidi Barri, each site some 20 miles from Singapore city. The total move was to be completed in seven days and the only transport to be used was five ambulance cars. He also gave instructions that no field medical equipment was to be taken; it was to be handed over to the Japanese forces.

Brigadier Stringer, in fearless fashion, protested and did not fail to show the three Japanese officers just what he thought of such inhuman treatment. However, his protests were to no avail and he was told that the majority of the sick and wounded would have to march. He was asked to nominate an officer to take charge of the transfer and he nominated me. On the afternoon of the next day I commenced the move, starting with the Australians. In the meantime I arranged with Colonel Hedley Summons, commanding the 2/9 Field Ambulance, and at capitulation running a modified field hospital in St Andrew's Cathedral, its grounds, and the Adelphi Hotel opposite, to take a risk and use his own unit vehicles, marked with a Red Cross, to move some of his personnel and equipment to Selerang and to set up a temporary hospital to receive the sick and wounded. We took that risk, the transfer was made without major incident, and it was not long before I realised that the Japanese were so disorganised that although they issued

¹ Prestige Lecture, Royal Women's Hospital, Melbourne (9 November 1982). Previously published in Attwood H, Forster F, Gandevia B (eds). *Occasional Papers on Medical History Australia. Medical History Society, AMA (Victorian Branch) and Medical History Unit, University of Melbourne*. Melbourne: 37-57. Reproduced with the kind permission of the publishers.

² Glyn White, OBE CBE ED MB BS (Melb) FRACP FRACOG, (1909-1987), was a small, lightly built man without fear. During his medical course, militia training was compulsory and on graduation he was commissioned Captain. Following war service and Changi he became a well known and respected neonatal paediatrician in Melbourne. Glyn was a small man, but a great human being. [Roll of The Royal Australasian College of Physicians, Vol 2:339-340]

orders they did not have the personnel to see that they were carried out.

While Colonel Summons was making his move to Selerang, I with my five ambulance vehicles had commenced shifting the 13th Australian General Hospital. In the afternoon of the day following our verbal encounter with Sekiguchi, I was a little surprised to see him arrive, by himself, to check on progress. At the time I was stripped to the waist, working like a labourer to make sure hospital equipment was packed as efficiently as possible. Whether he was astonished to see an officer doing menial work, whether I offered him a cup of tea or whether I simply smiled at him, I do not know, but his attitude towards me seemed to change from what it had been the previous day.

I again told him that with only five ambulances he had given me an impossible task and that to do it I required much more transport. He replied that he could not get me any more; so I said, 'If I can get it can I use it'? He thought for a while and then replied, 'Yes - have it here at 0800 tomorrow morning'. As he had not told me what vehicles I could bring I was duly there the next morning with 20 three ton trucks, 55 motor ambulances and a staff car for myself. When he arrived and saw the convoy stretching along the road he looked somewhat surprised, but he just said 'Wait here', and drove away. He arrived back in about three-quarters of an hour with 76 Japanese passes, one for each vehicle. I wondered at the time whether he was remembering that he was a medico, and that on the previous day he had not wanted to appear 'soft' in front of junior infantry officers. I was to learn later that if you wanted to request something it was always wiser to wait for the opportunity to speak alone to the officer concerned.

The following day Sekiguchi did not appear. In his place a Japanese infantry officer, Lieutenant Nakamira, arrived and he also could speak English fairly well. He asked me for my plans. I thought that Colonel Sekiguchi must have moved on with General Yamashita and probably had not had time to have passed on his orders, so I said, 'I have a week to shift the Australians, a week to move the British and a week to move the Indians', and he accepted this. If he had questioned my reply, I should have said that I must have misunderstood the original order that the whole move was to be completed in seven days. I asked whether Colonel Sekiguchi would be reappearing and when he replied 'no', I determined to take as much equipment as I could to make future life as comfortable as possible.

I suppose it is not surprising that after three weeks with 76 vehicles manned by the best scroungers I have ever met, working two runs each day, much useful 'contraband' was transported and, instead of 250 hospital beds, some 4,500 arrived at the various areas together with some 7,000 mattresses in which were hidden much needed medical supplies, a couple of pianos, reading material etc, the move of the 12,000 men took place without any of them being forced to march.

I now turn to the general conditions in the military camps in the Changi area, the eastern corner of the island, where 50,000 British and Australian troops were to spend varying periods of their prisoner of war existence. The area originally allotted was reasonable

in size and included modern barracks which had suffered minimal damage as the Japanese forces had attacked from the west. Water supply, sewerage and lighting systems were non-existent.

Fortunately, apart from about 4,500 sick and wounded, the rest were, on the whole, in a good state of health, only a small minority having been exposed to the hardships of the entire two months campaign. However, bacillary dysentery had appeared among units in bivouacs and this boded ill for maintenance of health under crowded conditions where, after two months, some 8,000 men were still without adequate shelter. Even on our arrival the Changi area was dirty and flies were breeding everywhere. At first, the water supply was obtained from anti-malarial subsoil drains and was rationed to half a gallon per head per day until later in 1942 when the supply had improved sufficiently to permit a ration of three gallons. By the middle of 1943 water carriage of sewage had been restored to a small proportion of the area, the remainder being served by a triple system of bore-hole latrines. The move to the gaol area early in 1944 involved a temporary reversion to the use of field latrines. Education of the troops in the simple laws of hygiene was not an easy task and I am afraid that it took a couple of hundred deaths, in a relatively short space of time, before they realised that we medicos were not talking rubbish. I suppose initially one could not entirely blame the men, exhausted by fighting a losing battle and then by a long march to the area, dirty, unshaven, hungry, their fondest dreams shattered and with only the unknown to look forward to. These were the men called on to dig latrines, clear up the area and, on half a gallon of water a day, to clean themselves and to remember always the basic principles of hygiene.

The management of the problem of dysentery was an ongoing one. The isolation of the patients and their care presented many difficulties. Initially, treatment consisted of divided doses of Glauber's salts but it was soon proved by the senior hospital physicians, Colonels Cotter Harvey and Bill Bye of Sydney, that relatively small doses of M&B 693 (Sulphapyridine), of which about half a million tablets had been smuggled through the guards in the move from Singapore, produced rapid symptomatic cures. It was impossible to examine for carriers except to ensure that cooks and cookhouse staff had stool examination on a frequent regular basis.

In July 1942 diphtheria first appeared and the incidence rose through the next two months; it was six months before it had smouldered away. It was a new experience for many of us and we were caught unawares, for most of the lesions were cutaneous, often occurring with scrotal dermatitis (a condition mentioned below), and I suppose we were fortunate to have only a 2% mortality. It was decided that a search for carriers was unwarranted as their isolation would be impracticable. Just prior to the outbreak of diphtheria a small epidemic of 'benign' lymphocytic meningitis occurred but it was not so benign for there was an associated mortality of 25%. The other continuing non-nutritional disease was malaria. To begin with, dysentery was the main offender, but at the end of 1944 ma-

laria was having greater detrimental effects than those from a defective diet.

The three and a half years of captivity were to produce a picture of malnutrition which was the result of inadequate food, debilitating disease and enforced hard labour. Mental attitude deteriorated, particularly when there was rapid weight loss and environmental conditions were bad. Lack of initiative was at first widespread, although not universal, but morale, in the sense of confidence in ultimate victory, was generally high. Plain insufficiency of calories was probably the cause of most of the deterioration in mental attitude. The individuals who kept fittest were those who were able to work hard and keep themselves cheerful and occupied, while those who sat about grumbling and pitying themselves lost weight and condition rapidly.

I shall now mention the main conditions encountered and the methods we devised to combat them. Of subjective manifestations, apart from the sensation of hunger, the earliest were muscular weakness, an inability to put up with protracted physical exercise and slow recovery of fatigued muscles. "Blackouts" were common and I remember one medical officer who would never smoke unless he was lying down - whether this was due to malnutrition or to the material he was smoking, known to the troops as Sikh's beard, I could not be sure.

Beri-beri in all its forms was seen - mild with moderate oedema, with or without dyspnoea on exertion and a moderate number of extra-systoles, through to severe, with dyspnoea at rest and a varying degree of congestive cardiac failure with or without atrial fibrillation. The majority of cases presented in the first 10 months; the decline and eventual disappearance towards the end of 1942 reflected improvement in the diet brought about by the issue of Red Cross supplies in October of that year and the rise in the value of the ratio of thiamine in micrograms to non-fat calories in the diet. By this time we had reasonably accurate weekly figures on the latter from Major Burgess, RAMC, a nutrition expert, on whose advice I closely relied. With his help and the co-operation of the camp supply officer, who controlled under medical direction all food issues except Red Cross supplies, we were able to keep this important ratio above the risk figure of 0.3.

One of the most unenviable tasks which I had to perform during the whole of my POW days was to decide on the distribution of Red Cross supplies. Naturally, the hospital medical officers considered that the bulk of the Red Cross supplies should go to the hospital, whereas the regimental medical officers, who had in their regimental aid posts many men who under normal circumstances would have been in hospital, also had strong claims - and I had to remember that the supplies had been sent on behalf of all prisoners of war. After much consideration and consultation I trust a just distribution resulted.

Nutritional oedema began to appear quite early. Its incidence showing marked variations depending on the return of our own working parties or the arrival of prisoners from other areas such as Java - these came with practically no equipment, many of them sick, some to use Changi as a staging camp and others to remain permanently in our care. As an example I shall describe

what happened to F Force working party, which left in April 1943 and returned in November and December. The barbarism that this force experienced, with the possible exception of the Borneo tragedy where only one or two survived to tell the tale, had no equal in ferociousness and cruelty in the history of other Changi working parties. F Force comprised 7,000 officers and men. Within eight months 50% had died and all survivors had suffered from one or more illnesses - cholera, malaria, dysentery, beri-beri, tropical ulcers and starvation. I was there to see them off at 3am on a lovely tropical morning and I was also there to welcome them back at 2am and what I saw has left a permanent scar on my memory. Many of my friends were missing and those who returned had so altered physically that I did not recognise some. One can scarcely imagine the problem that this sudden influx of 3,500 sick was for the unwarned medical services. Such devastation was brought about by the ruthlessness, cruelty, lack of administrative ability and/or ignorance of members of the Japanese army. The stories of heroism and fortitude of the prisoners equalled the highest traditions of the AIF in war. The majority of the animated skeletons who came back survived - their condition gradually improved but many suffered lasting physical and psychological damage.

Many presented with oedema of the lower limbs. Previously, such oedema had usually been classified as due to cardiac beri-beri, but through the astute observations of our senior physicians, Cotter Harvey and Bill Bye, it was recognised that it was not primarily cardiac in origin, and so many men were saved being made cardiac invalids, too scared to exercise. So certain was Colonel Bye of his clinical judgement that he sought permission from me to put 20 of them to the physical test of an exercise run around the Barrack Square. Not one of them dropped dead or showed any permanent ill effects, much to my great relief.

Various other vitamin deficiencies occurred - angular stomatitis, cheilosis, glossitis, pharyngitis, lesions of all muco-cutaneous junctions, scrotal dermatitis and corneal degeneration. Pellagra, presenting with white heaped-up patches on mucous membranes inside the mouth, recurrent diarrhoea, often four stools in the morning and none for the rest of the day, and the typical skin lesions, responded dramatically to nicotinic acid. Some cases improved rapidly on yeast alone. The incidence of pellagra increased from March 1944 to May 1945 and seemed to coincide with the issue of maize as part of the Changi diet.

Deficiency amblyopia gave cause for grave concern. It was often associated with degeneration of the cornea and varying degrees of damage to the optic discs, from a mild papillitis with slight hyperaemia and slight blurring of the edges of the discs, to advanced optic atrophy. The condition seemed to improve with Marmite and as there were no supplies of pure riboflavin available we decided to do a trial with a special diet and large quantities of green leaf extract. It soon became obvious that lack of riboflavin was the main aetiological factor.

Another distressing although not fatal condition was named by the troops 'happy feet', the burning painful feet syndrome. It started first as mild paraesthesiae

in the feet associated with aching which demanded movement but this did not improve it. Later the aching increased and spread up the legs; sudden shooting pains like electric shocks were added. The paraesthesiae became intense as an acute burning or freezing feeling in the feet. Pain was always worse at night and generally prevented sleep. Most got some relief by walking about but their physical condition deteriorated rapidly due to exhaustion. A few cases of spastic paraplegia occurred, a condition which responded favourably to treatment with Marmite and rice polishings. Initially, a tentative diagnosis of multiple sclerosis had been made.

I can only summarise the many and varied methods employed to combat under-nutrition. We found that the addition of beans, rice polishings, ground nuts, yeast and abundant green vegetables to the poor diet of Asiatic type prevented many and cured most of the serious nutritional disorders. I am sure that the comparatively low mortality in Changi was largely due to the type of produce purchased locally and to the careful utilisation of these food materials. In addition, the local hospital poultry farm produced over 40,000 eggs in the last two and a half years of captivity, and the men were encouraged to breed ducks and chickens for their own private consumption - the purchase money to initiate this activity was provided from their own pay. Yeast was produced as a camp project and between April 1943 and January 1944 some 40,000 gallons of yeast brew were produced for members of the AIF and distributed on the prescription of a medical officer.

Before describing the remaining projects embarked upon under my supervision, I must mention Captain Michael Woodruff (later Sir Michael, FRS), whom I had appointed as 'research officer'. Michael was one of our medical officers who possessed degrees in both medicine and engineering, his from the University of Melbourne. The camp and I owe him a tremendous amount and much of what is now described was his doing. The only part I played was to procure the equipment which he required and to provide advice and assistance on any technical problems which arose. We were indeed very fortunate in Changi to have a goodly number of highly trained engineers, signallers and leaders in every type of manufacturing endeavour.

It was known that grass and green leaves generally were rich sources of riboflavin and that for satisfactory extraction with cold water the cell walls of the leaves and grass had first to be mechanically broken down. The steps in production were as follows. First, the grass was cut with scythes and reaping hooks of local camp design and manufacture. Up to half a ton a day was collected and then washed in dilute potassium permanganate, cut into pieces about half an inch long by an electrically driven stationary lawnmower, crushed by being passed four times between electrically driven rollers held in close contact by a heavy spring, and next packed into large percolators. The latter were locally made from steel lockers (present in the barracks when we first arrived) cut up and welded together into the required shape and size using wire from the boundary fences as the welding material. The pulp of 200 lbs of grass was fed into a hopper, then into each percolator and 16 gallons of slightly acidified tap water were added. Six hours later the cock was opened and the

fluid allowed to trickle out overnight into a collecting vessel. Each percolator yielded about eight gallons of extract. From mid-May 1943 to May 1944 about 30,000 gallons of grass extract were produced by this method. I shall not mention the name the troops gave it but, knowing it probably would prevent blindness, they swigged it down. It was calculated that each pint of the extract contained about 5 mg of riboflavin.

After requests, repeated at every opportunity, eventually, in September 1942, the Japanese issued rice polishings. It was soon found that patients with any form of bowel disorder could not tolerate even small doses and even the most healthy could rarely take more than 2 ozs without developing serious diarrhoea. Hence, in the dry state, rice polishings could be used only as a maintenance dose. To change this, 30 lbs of rice polishings were soaked overnight in 20 pints of slightly acidified water. Next morning the mixture was placed in a hessian bag and subjected in a screw press to a pressure of about 100 lbs per square inch. This yielded about 15 pints and the residue was then mixed with a further 15 pints of water and extracted. The two lots of fluid were mixed together, giving 1 pint for each original pound of polishings. This extract was tolerated by the troops.

Soya beans first appeared in Changi in May 1943 as a purchase from the Camp Messing Fund and from 1944 onwards they were occasionally issued by the Japanese in place of a certain amount of rice. Soya beans are a valuable food, containing 40% high value protein, 20% fat and they are also rich in vitamins of the B group. Unfortunately, they are exceedingly indigestible and the majority of the men passed unaltered beans in their stools. Some Dutch prisoners from Java told me how to overcome the problem. The beans were soaked overnight, then passed through metal rollers which sheared them into halves and partly detached the husks. After agitation in water to complete dehushing, the beans were then placed in perforated metal trays (4 feet x 2 feet and 1 inch deep) to a depth of 1 inch and then seeded with fungus, the original source of which was the withered petals of the hibiscus plant. The trays were then put on racks, covered with moist sacking and left for 36 hours or so. By this time the contents had become a greyish-green rubbery mass of beans well held together by the fungus. This mass was cut into segments and deep-fried in red palm oil. This removed all evidence of the fungus and resulted in a brown, delicious tasting and readily digestible food - Tempe.

Reference must be made to one of the most outstanding Australian commanding officers of the AIF Malaya. I refer to, as he was then, Lieutenant-Colonel Frederick Gallagher Galleghan, CO of the 2/30 Infantry Battalion. In civil life he was a senior officer in the Commonwealth Investigation Branch and often came in contact with the late William Morris Hughes, the then Attorney-General. When he arrived in Malaya with his battalion in September 1941, I had known him only by reputation, and as our paths were not to cross before the AIF was concentrated in the Changi area, my first encounter with him, after capitulation, occurred at the end of one of my daily rounds of the sick and wounded. I was tired and he was disappointed at being captured, so that neither of us was in the happiest of moods. He was

a tall man, straight as a ramrod, immaculately turned out, steel grey hair, piercing dark brown eyes and carrying a cane, which he did quite pugnaciously. He had served in France in the latter part of the first world war, having enlisted when he was seventeen and risen to the rank of regimental sergeant-major before being wounded and invalided from France just prior to the Armistice. Following his return home in 1918 he continued his military career with the citizen forces, rising to the rank of lieutenant-colonel. Following his prisoner of war experience he was promoted to major general and commanded the Australian component of the occupation force in Berlin. On his return home from this appointment, he received a knighthood and has since died.

At our first meeting he approached me regarding the health of his brigadier, who was ill and not getting what he considered the best of attention. I am afraid that initially I was not very sympathetic as it was not my immediate responsibility. However, there was something about his personality which, although he was on the attack, greatly appealed to me, so I said I would organise something for his sick brigadier and we parted friends. Little did I think at this first meeting that we would be very closely associated in the years that lay ahead, that we would be sharing living quarters, sleeping alongside one another and, during the time we were working together, I would see him fearlessly fight to protect the most lowly private among the troops. I thought he was an Irishman but when I asked him if he was, he replied by relating an incident which occurred during the 1914-18 war. When a Roman Catholic padre questioned him about his continued absence from mass, he replied that he wasn't of the faith, and the padre taking another good look at him, said 'Well, somebody twisted!'

He was in every way a truly remarkable man, an outstanding character, hard as nails but basically kind. When the senior officers were removed from us in August 1942, 'Black Jack' as he was then not too affectionately known, was appointed to command the AIF component of the prison camps. At the time morale was probably at about its lowest and discipline was not good. He was a strict disciplinarian and a stickler for military etiquette. He considered discipline to be a state of the mind and, although he could be justly harsh, he preferred to gain respect by his personal example. If combatant officers and men are ill-disciplined no medical service, no matter how excellent, can function efficiently, and when he took over he proved to be the right man, in the right place and at the right time. It was not long before discipline had improved and by the end of our incarceration it was of a high standard. I can still hear him saying 'You are not going home as prisoners of war - you will march down Collins Street as soldiers'. To illustrate his personality, on one occasion he not only told the local Japanese Camp Officer that his troops were going on leave improperly dressed, but also instructed him to have them paraded before him (Galleghan) before they next went on leave. They duly arrived, he called our interpreter, inspected every man, and made each one correct anything which was out of order in his dress. When he finished, he dismissed them. They did not salute him, so he called them back and they did salute him.

He had one small annoying habit. Each morning, when he awoke, he would call out from behind his screen 'Glyn, are you there?' 'Yes' was my reply: 'Have I ever told you what I think of Hitler?' Then he would mumble a few words to himself. I put up with this for about three months and then one morning I plucked up courage and remonstrated with him and told him that he should wake up happy and bright. The following morning as usual out came the same 'Glyn, are you there?' On my replying 'Yes', he said 'Well listen to this' and he sang the first verse of 'Jesus wants me for a sunbeam'. He was also a good psychologist. When the officers first received pay, before the working troops, I felt sure that the majority of it would be pooled. On mentioning this to him, he demurred, and I thought at the time that he was losing his touch. Over the next 36 hours we argued about it. I was quite frank concerning my views and becoming more and more heated until he said 'Tomorrow morning I have called for a conference of the eight senior officers in Camp and I want you there', but he still argued against my recommendation. I went into the conference full of fight. We sat around a long narrow camp-constructed table, he at one end and myself directly facing him at the other with the remaining officers along each side. After a lukewarm introduction he asked each officer in a clockwise direction, what their views were, but when it came to my turn he passed over me and I thought that he was not going to give me a chance to speak. By the time he had heard from the last one it looked as if my idea that only 10% of the pay should be retained and 90% pooled was to fail, and I was fuming. Then, quite casually, he said 'What have you got to say, Billy?' (he had given me this 'nickname' as he said that I reminded him of another Welshman, Billy Hughes) so I stood up and in the most forceful Australian language that I could muster I told them just what an officer's responsibility to his troops was. When I finished he simply said 'Well, gentlemen, you have heard what he has had to say - and I so order it.'

Azuama (Kim Yung Duk)

During my stay in Changi I came in contact with a Korean lance-corporal who had been studying in Tokyo at the outbreak of the war and had been conscripted into the Japanese army at the age of 17. He looked to me to be a refined type and he was never armed, not even with sidearms. He was in charge of the garden party, comprised of barely fit men, and he did not push them. He approached me one day and after a considerable time I understood that his best friend had a big boil on his 'tail' and was too scared to go to the Japanese doctor because he would just stand him up and slice into it. I told him I would look at his friend if he brought him to me after dark. They duly arrived, and his friend was in considerable pain and limping. The boil was fluctuant and he was very apprehensive. I did not want to use any of our meagre supply of chloroform or ether but I had a few bottles of Evipan, an intravenous anaesthetic, which had not been issued because it had been lying out in the sun before we got our hands on it. I decided to risk a small injection and it worked like a charm. The only problem was that when he was coming out of anaesthesia he became hilarious, noisy and diffi-

cult to restrain; this was somewhat of a problem as we were not far from the Japanese lines. Next day Azuama came to thank Colonel Hedley Summons and myself for treating his friend and to ask if we would help him to learn to speak English. We at first demurred but eventually agreed that he could come for his lessons in the evenings provided he was most circumspect about his approach.

He came regularly until, after a couple of months, I became ill with what was eventually diagnosed as amoebic dysentery and had to take to bed, so his lessons had to be postponed. Hedley Summons told him that I was very sick and that we did not have any emetine, which was not strictly true although it was in very short supply, and that without it I might die. He appeared to be upset and it was not long before he came to see me to find out what drugs I required. I explained to him that I could not use any for myself as there were several worse than I was, but he persisted, so I wrote down for him 2,000 grains of emetine - enough to treat about 200 cases. The next day was his day off, when the Japanese ordinary ranks went to Singapore and returned at midnight. To my astonishment he was back late that afternoon with 2,750 grain of Burroughs Wellcome emetine in neat little phials each containing 20 grains. He pledged me to secrecy concerning it, a pledge which I kept until I returned home.

After I had recovered he resumed his English lessons and although Hedley Summons and I continued to view him with some suspicion, our fears became somewhat allayed when he commenced to give us more or less daily accounts of how the war was progressing and we knew these were authentic as we received the BBC news daily. After I was back on duty he asked me to be the medical officer for the day to the garden and aerodrome working parties. Not knowing why he wanted me to do this, I went, wondering why he had asked me. At lunch break he came and told me to follow him. It was not long before we were on a jungle track which eventually led us to a Chinese kampong and shortly I was sitting down to the best meal I had during those years of captivity. Returning along the jungle track, I was leading, when to my horror I caught a glimpse of a Japanese sergeant who had a vile reputation amongst the troops, so I threw myself into the jungle. Azuama, who had not seen him, wondered what I was up to and when I told him, he said to me 'No worry, I have him in the palm of my hand'. Nevertheless we remained hidden until he was safely out of the way and I returned to camp with some 'goodies' concealed in my shirt for the members of my hardworking and dedicated office team.

At the capitulation of the Japanese in August 1945, Azuama had become so proficient with his English that the British relieving force, after having him security checked, used him as an interpreter. I said goodbye to him in September 1945 and he eventually returned to Korea, married and had a son. We corresponded until 1950 when he wrote saying that he was going to return to Singapore to try his luck in business as he had made some friendly contacts with the Chinese merchants during his stay in Singapore. The Korean War intervened and that was the last time I heard of him until 1969 when I was passing through Singapore

with my wife on a trip abroad. We arrived at the hotel at about 10 pm and were shown to a VIP suite, complete with reception room and dressing room. I thought some mistake had been made and was on my way back to the office when, on passing through the reception room, I noticed an envelope attached to a collection of orchids. I thought I would see who should be there, and to my amazement, I read 'Dr & Mrs Glyn White', and on opening it 'Dear Glyn, Hope you find this more comfortable than Changi. Kindest regards, George Milne, General Manager'. George had been a POW and my Australian travel agent, another fellow POW, had informed him of my pending arrival.

Before unpacking, I decided to look in the telephone book to see if there was a Kim Yung Duk, Azuama's Korean name. There it was, the only one, so I rang and when he answered I said 'Do you come from Korea?' He replied 'Yes'. 'Was your name Azuama?' I asked. 'Who is it, who is it?' he said. 'Do you remember Colonel Glyn White?' I asked. 'Where are you, where are you?' and I told him my location. In less than 10 minutes he was in our suite. I have never experienced such an emotional reunion - except my reunion with my wife on my return home in late September 1945.

Although it was late, he insisted that he take us for a Chinese meal. We accompanied him down to the foyer. He went to the door and beckoned to what I took to be a taxi but we were ushered into a beautiful black air-conditioned Mercedes-Benz. It transpired that he was a very successful importer and exporter with two shirt factories, two boot factories and many other interests. His first wife had been killed in the Korean War and his little son, Ken, stayed in Korea with his grandmother until he remarried. When his son was seven he brought him to Singapore. After being at a local boarding school in Singapore until he was 12 he was sent to King's College in Adelaide. He spent Christmas 1969 with us and was a regular visitor until he was transferred in 1974. In 1973 he had obtained a bachelor of commerce degree, and both his father and I attended the graduation ceremony.

Early in 1975 Kim wrote to me saying that he had pneumonia, which turned out to be a carcinoma of the lung, and he died in Japan in September 1976. I went from Melbourne to his memorial service in Singapore. It was a Buddhist ceremony and I was surprised but pleased to be invited to deliver the oration. It was to me a fitting climax to our long friendship. The story is recounted to show that the war had some personal recompenses and that peoples of other races have basically the same feelings as we do.

Before concluding I must pay tribute to the members of the Australian Army Nursing Service, who served with us in Malaya. In referring to them, Colonel Derham, in a public lecture given on his return to Australia said:

'The work and conduct of the members of the Australian Army Nursing Service in Malaya was so significant, at all times, that I can hardly trust myself to speak of them. Their supreme courage and devotion were never more inspiring than when our hospitals came under heavy fire.

It was then that they set an example of calmness and courage to many a shaken soldier, which brought tears of pride to the eyes of their male colleagues, including myself. The fate of some of them, who were evacuated too late, is the blackest page in all the black tragedy of Malaya. Their memory will always be the most sacred trust of those for whom they so gladly risked their lives.²

This expressed the views of all members of the AIF, Malaya. They were indeed wonderful women.

I also express my thanks to our counterparts in the British, Indian and Netherlands medical services and I shall never forget the members of my own Aus-

tralian Army Medical Corps, the commanding officers, officers in charge of hospital divisions, hospital medical officers, and regimental medical officers, non-commissioned officers and men. Many of the officers were quite senior to me in the profession. Many of them are not alive today, but all of them gave me loyalty, co-operation and help throughout our captivity and so turned what might have been a far more terrible catastrophe into an experience which I can look back on, in many respects, as something grand.

In conclusion I pay tribute to my colleagues, to whom we all should be grateful, those who in carrying out their duty paid the supreme sacrifice.

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Short Article

Utilisation of the Primary Casualty Reception Facility¹

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Introduction

A Primary Casualty Reception Facility (PCRF) is currently planned for one of the Training and Helicopter Support Ships (THSS), HMAS KANIMBLA and HMAS MANOORA. As part of the workshops at the 1995 Naval Health Services Conference, the authors briefly reviewed how these facilities would be utilised, casualty regulation within the facilities, the composition

of Maritime Surgical Support Teams (MSST), the availability and training requirements of the MSST, and the future development of capabilities in this area. This paper will outline these findings.

Utilisation

The PCRF has a wide and varied range of potential uses beyond that of a Level Three support facility dur-

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ing maritime conflict. The facility could be used to support the following:

- Land warfare operations, both in an amphibious assault and as part of a medevac chain.
- Peacekeeping operations
- Emergency repatriation of Australian personnel
- Disaster Relief
- Humanitarian support

Casualty Regulation

Casualty regulation onto the ship will be scenario dependant. In conflict scenarios, including peacekeeping operations and emergency repatriation, the PCRf will have to accept what comes. This may entail identification of areas to deal with the overflow from both triage and low dependency areas. Other humanitarian operations will allow for regulation of flow to and through the facility.

MSST Composition

Given the restrictions of operating on board the THSS, the numbers of personnel are restricted to a maximum of 63. The composition of the teams would be scenario dependant. Maritime and land conflict would require a greater preponderance of trauma trained surgical staff, humanitarian efforts would require a greater range of surgical specialties while disaster relief would require less surgical and more public health capability.

MSST Training

Personnel assigned to the ship, both permanent and reserve, need to have dedicated shadow postings. These shadow postings should include necessary training requirements^{1,2} (eg. EMST for medical officers, ICU training for select nursing officers) and should be exercised on at least a yearly basis. One proposed method of exercising the staff would be to run yearly humanitarian exercises in the Indonesian archipelago or the South West Pacific, similar in scope to the Bhakti exercises.

MSST Manning

Manning, both from the Permanent Naval Forces (PNF) and the Reserve, will continue to be difficult in almost all scenarios. The use of tri-service medical personnel and the backfilling of PNF billets with reserves are possible options to deal with shortages, particularly in the Medical Officer area.

PCRf Capabilities

Whilst the authors felt that the PCRf markedly improved the RAN's capability to support maritime and land forces, further consideration needs to be given to the training of shadow-posted personnel, provision of appropriate medical manpower, medical stores, management of NBC casualties, strategic aeromedical evacuation and medical response to internal casualties.

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1. Baker MS. Advanced Trauma Life Support: Is it adequate stand alone training? *Mil Med* 1994; 159(9):587-90.
2. Koehler RH, Smith RS, Bacaner T. Triage of American combat casualties: The need for change. *Mil Med* 1994; 159(8):541-48.

Abstracts

From Andy Robertson

Morgan D. Medical confidentiality in the Armed Forces. *J R Nav Med Serv* 1995; 80(3):169-70

The doctor/patient relationship is unique. The doctor's surgery/clinic can be likened to the confessional and the duty of confidence to a patient does not end with the patient's death. It is ongoing. It is accepted that in the Armed Forces, a Commanding Officer can request disclosure of all relevant medical information by his medical officer. The medical officer in this case would need to be guided not only by military law but also by guidelines laid down by the General Medical Council (the GMC 'blue book'). Each case needs to be considered on its own merit. The Medical Defence Union is available to discuss individual cases with its members.

Comment: Morgan makes a valid point about the care required in disclosing medical information, even to Commanding Officers. This is a reasonable summary of some of the principles which should be followed.

Satava RM. Virtual reality and telepresence for military medicine. *Comput Biol Med* 1995; 25(2):229-36

The profound changes brought about by technology in the past few decades are leading to a total revolution in medicine. The advanced technologies of telepresence and virtual reality are but two of the manifestations emerging from our new information age; now all of medicine can be empowered because of this digital technology. The leading edge is on the digital battlefield, where an entire new concept in military medicine is evolving. Using remote sensors, intelligent systems, telepresence surgery and virtual reality surgical simulations, combat casualty care is prepared for the 21st century.

Comment: These two articles highlight the keen interest in telemedicine in the international military medicine community. The Royal Australian Navy's telemedicine trial during RIMPAC is a timely exploration of this technology by the ADF.

Lilienthal MG. Defense Simulation Internet: Next generation information highway. *J Med Syst* 1995; 19(3):213-7

The Department of Defence has been engaged in the Defence Modeling and Simulation Initiative (DMSI) to provide advanced distributed simulation warfighters in geographically distributed localities. Lessons learned from the Defence Simulation Internet (DSI) concerning architecture, standards, protocols, interoperability, information sharing, and distributed data bases are

equally applicable to telemedicine. Much of the vision and objectives of the DMSI are easily translated into the vision for world wide telemedicine.

Lyttle J. Canadian military physician one of many who tried to help Rwandan's cope with a "world of hurt". *Can Med Assoc J* 1995; 153(4), 468-70

Lieutenant-Commander Colin Harwood was part of a team from the Canadian Forces Medical Service (CFMS) that was sent to Rwanda in the wake of that country's bloody civil war. The Ottawa-based officer says the CFMS personnel helped ease many serious medical problems during the 10 weeks they spent there, although the sheer numbers of wounded, diseased and orphaned people sometimes seemed overwhelming. The Canadian personnel helped more than 22,000 patients during their stay.

Mehran R, Connelly P, Boucher P, Berthiaume E, Cote M. Modern war surgery: the experience of Bosnia. *Can J Surg* 1995; 38(3):266-74

In the first of two papers on the experience of a Canadian military surgical team in the former Yugoslavia, the authors describe the deployment of the field surgical hospital, the medical structure that supported the Canadian battle group. The hospital was made up of tent sections erected within an unfinished concrete factory building. The hospital comprised a treatment area for sick parades and reception, a pharmacy, a resuscitation area for nonambulatory casualties, a laboratory, an x-ray section, an operating room and sterilisation section and a ward. The hospital could be mobilised if necessary. The setup proved to be functional for the treatment of injured soldiers. Although long delays were expected because of difficulties in transporting the injured, the patients reached the hospital in a reasonable time after injury and could be treated satisfactorily. During the period of its deployment, this hospital was used more than any other Canadian hospital in the United Nations mission. This experience allowed the authors to identify deficiencies and to correct them quickly.

Comment: These two Canadian papers give a good overview of Canadian military medical operations over the last two years. Given their similar force structure and size, the papers provide some useful lessons for the ADF.

Miller P, Pearn J, Marcollo S. Radiology in Rwanda. *Australas Radiol* 1995; 39(4):337-42

This account documents some aspects of military radiology in the aftermath of the Rwandan Civil War of 1994. Following the genocidal conflict of April-July 1994, all radiographic services ceased in Rwanda, a

nation of some 7,500,000 people. As part of the United Nations Peacekeeping Force, UNAMIR II, the Australian Medical Support Force established and provided, on an ongoing basis, sophisticated medical, surgical and intensivist care for the sick and wounded United Nations personnel, of whom there were up to 7000 deployed in Rwanda; and, as part of its humanitarian outreach, emergency medical and surgical care for Rwandese civilians. The Australian contingent of 308 service personnel established the Australian Military Hospital (the 'United Nations Hospital') in the former Clinic Wing of the Kigali Central Hospital. From August 1994 the Radiology Department of the Australian Medical Support Force provided the first specialist X-ray services as part of the re-building of the stricken nation and, over the ensuing year, provided a diagnostic service for soldiers and civilians with both chronic and recent war wounds, trauma victims in the aftermath of the Civil War, sick and injured soldiers and Rwandese suffering from any of the full range of medical conditions encountered in tropical Africa.

Ramsey W, Bridgford LR, Lusby RJ, Pearn JH. The Australian Medical Support Force in Rwanda. *Med J Aust* 1996; 163(11-12):646-51.

In the aftermath of the Rwandan civil war, Australia's defence forces deployed a medical force to support the United Nations Assistance Mission. In this article, Wayne Ramsey, Commander of the Australian contingent, Lindsay R Bridgford, Officer Commanding Bravo Section, Robert J Lusby, Lt.-Colonel (Surgeon), Australian Medical Support Force Hospital, and John H Pearn, Colonel, and Director of Intensive Care in the Australian Medical Support Force Hospital, describe the Australian effort in the rebuilding of a shattered people and, in particular, of Kigali Central Hospital, the country's major medical facility.

Comment: Two useful contributions from the ADF contingent to Rwanda.

Collins DL, Harrison G. Spatial disorientation episodes among F-15C pilots during Operation Desert Storm. *J Vestib Res* 1995; 5(6):405-10

Spatial Orientation (SO) under flight conditions is the accurate "integration" of sensory inputs from the dynamic aviation environment that result in safe and effective goal-oriented performance. Insidious sensory mismatches routinely occur during flight, impeding pilot performance. When this sensory dissonance occurs, if not appropriately resolved, it will result in perceived or actual errors in aircraft control that are estimated to cost the Air Force between \$150 and \$200M per annum in aircraft accidents. A scientific survey was created and administered to 96 F-16C combat pilots after their return from Desert Storm. The survey sought to determine where in the flight profile, and under what conditions, spatial disorientation (SD) episodes occurred. The survey consisted of multiple choice and open-ended questions. The analyses of the data revealed that visual transitions from inside to outside the cockpit (or the reciprocal) under different conditions of flight were associated with the occurrence of SD episodes. The frequency of SD episodes varied depending on visual transitions (or no visual transitions) and types of flight conditions (for example, nighttime and bad weather). This SD survey provided flight information that allowed us to direct research to those areas that were problematic during combat operations.

Comment: A useful investigation of spatial disorientation in pilots.

Korte DV, Schumm WR, Mayberry RW, Tilford ML, Duckett MC. Environmental health issues in prisoner of war camps. *Mil Med* 1995; 160(10):483-6

Maintaining adequate environmental health and sanitation conditions in prisoner of war camps is essential for the fulfilment of our international legal obligations under the Geneva Conventions. Insights from Desert Storm and other conflicts are discussed.

Comment: One of the difficult aspects of the Gulf War was providing appropriate medical care for prisoners of war. This paper addresses the public health factors which need to be considered in planning and running these camps.

Traude TV. Women in combat. *Aviat Space Environ Med* 1995; 66(12):1207-11

Comment: This Louis H. Bauer lecture, given by BRIG Traude, succinctly reviews the history of women in combat from 1782 until the present. He reviews the work of the Commission that looked into women in combat roles and where the US military presently stands. He concludes that we should fill our ranks with the best and should send the best to war, regardless of gender.

McCulloch I. Crucible of fire: The Boer War and the birth of the Canadian Army Medical Corps. *Can Med Assoc J* 1995; 153(10):1494-7

Although Canada's military physicians didn't come to prominence until WW I and WW II, the Canadian Army Medical Corps (CAMC), the forerunner of the Royal Canadian Army Medical Corps and the current Canadian Forces Medical Service, actually had its origins in the Boer War. During that turn-of-the-century conflict, field hospitals accompanied Canadian troops to South Africa. Ian McCulloch discusses that early type of medical service and the steps that led to the creation of the CAMC.

Rolicka M. New studies disputing allegations of bacteriological warfare during the Korean Warfare. *Mil Med* 1995; 160(3):97-100

In the television series 'Korea the Unknown War', produced jointly by Thames Television (London) and WGBH (Boston) in 1990, General Matthew Ridgway, Commander in Chief of United Nations forces during the Korean War, called the accusations that the United States waged bacteriological warfare "black propaganda." The charges discredited the United States and, despite denials and many international discussions,

have not been completely refuted until now. Following studies in archives previously not available for research and after uncovering new sources, many specific examples of black propaganda were discovered that contained false information and lies discrediting the United States. The mechanism of lies, which convinced the Korean population that bacteriological warfare was going on and that the only way not to become victims of the United States' inhuman cruelty was to fight, are shown in this paper.

Mobley JA. Biological warfare in the twentieth century: Lessons from the past, challenges for the future. *Mil Med* 1995; 160(11):547-53

Biological warfare and fear of biological warfare have affected our wars, our peace, and our research throughout this century. During World War I, animals were deliberately infected with glanders. During World War II,

biowarfare research was carried out by Japan, Germany, England, and the United States. Japan carried out biological warfare attacks in China. England used biological warfare for the assassination of Reinhard Heydrich. In the 1950s and 1960s, Army researchers released bacteria over US cities in biological warfare tests. The most frequent biological warfare terrorist episodes have been contamination of food and water. Although biological warfare can be very low tech, genetic engineering is capable of making biowarfare agents available in vast quantities. Biowarfare research should continue, but the National Institutes of Health should oversee human biological warfare research.

Comment: These two papers are useful additions to the literature on the history of biological warfare.

From James Ross

Newman DG. Cervical intervertebral disc protrusion in an RAAF F-111C pilot: A case report. *Aviat Space Environ Med* 1996; 67:351-3

This case report describes a serious cervical spine injury occurring in an F-111 pilot of the RAAF. The pilot developed significant cervical intervertebral disc protrusion with severe, progressive neurological signs and symptoms in his right arm for a period of 4 months. Multiple investigations including MRI and myelography established the site of the lesion as C6/7. He eventually responded to bed rest and made a complete recovery. The aeromedical disposition of this aviator and the roles of different treatment modalities in the aviation environment are discussed. The need for more research into +G_z-related neck injuries and the requirement for preventive strategies to protect the cervical spines of high performance pilots are also highlighted.

Comment: An interesting case report by a AMMA member (and past winner of the Weary Dunlop Award). There is, however, no convincing evidence that this episode of cervical intervertebral disc prolapse was due to G-forces. The pilot was returned to flying status and remains symptom free after 3 years. As an aside, the subject is a pilot of a high performance aircraft, rather than necessary, a high performance pilot.

Kragh JF Jr, Taylor DC. Parachuting injuries: A medical analysis of an airborne operation. *Mil Med* 1996; 161:67-69.

The purpose of this paper is to discuss parachuting variables as they affect support and planning. The authors retrospectively analysed an operation in which a Ranger battalion parachuted onto an airfield drop zone. Leaders weighed Rangers to estimate the soldiers' load. The advance team failed to adequately coordinate administrative medical assistance on the drop zone. Forty-one Rangers were injured and evacuated from the drop zone (8.6% of the jumpers). Variables in such operations include drop zone selection, equipment weight,

drop altitude, wind speed, the wind-flight angle, drop height, and jumper density over the drop zone. Solutions include cargo drops and leaders' repeated emphasis on minimising the soldiers' loads in accordance with mission accomplishment.

Comment: The medical officer broke his ankle and subsequently the command and control of the medical evacuation was lost. He later assessed that only 16 of the 41 should have been evacuated. A further 30 rangers carried on with minor injuries. An interesting case study.

James LC, Kowalski TJ. Suicide prevention in an Army Infantry Division: A multi-disciplinary approach. *Mil Med* 1996; 161:97-101

This article is intended to provide an overview of the 25th Infantry Division (Light) Suicide Prevention Program. A multi-disciplinary intervention model, it outlines the role of chaplains and division mental health officers as well as indicators or warning signs relevant to army personnel who have committed suicide. Prevention strategies applicable to the military community, including Crisis Intervention Command Consultations, will be recommended. It is hoped that this information will not only assist professionals in identifying personnel at risk for suicide, but aid in the development of other suicide prevention programs.

Comment. Suicide prevention has a very high profile in the US military at the moment. Despite a lower suicide rate than the community at large, considerable resources are expended aimed at reducing this rate further. Air Combat Command of the USAF has recently introduced a detailed investigation and reporting process, modelled on aircraft accident investigations, for all suicides. The recent suicide of Admiral Boorda, US Naval Chief of Operations, can only further highlight suicide.

Bendrick GA et al. Prevalence of decompression sickness among U-2 pilots. *Aviat Space Environ Med* 1996; 67:199-206

Background: Though it is rarely reported, decompression sickness (DCS) is an expected risk for U-2 aviators. The potential for chronic sequelae of untreated DCS in this population has never been addressed.

Methods: After conducting a preliminary survey at an active duty U-2 squadron, a cohort of 416 U-2 pilots (active duty and retired) were mailed two sequential anonymous surveys to assess demographic data, career prevalence of DCS symptoms, and overall health status with an emphasis on chronic musculoskeletal problems.

Results: The response rate for each mail in survey was over 60%. During their career, 75.5% of pilots experienced DCS symptoms such as joint pain, skin manifestations, and/or various neurological problems. Symptoms generally started during flight and resolved upon descent. Many pilots voluntarily increased their oxygen pre-breathing time, or inflated the pressure suit during flight to prevent or treat symptoms. At some point in their career 12.7% of those experiencing symptoms either altered the flight profile or aborted the mission as a result. The association of past DCS with current arthritic problems was not statistically significant.

Conclusions: The career prevalence of DCS symptoms in U-2 pilots is higher than previously reported, and these symptoms sometimes affect mission completion. We found no evidence that chronic musculoskeletal sequelae (eg arthritis or dysbaric osteonecrosis) are causally associated with DCS in this population.

Comment: U-2 pilot is exposed to a cabin pressure of 29500 feet at its operational altitude. It is of interest that so few pilots report symptomatology. The recent policy change, in both the US and Australia, so that Decompression Illness (DCI) cases are grounded for only 72 hours if sign and symptom free has opened the way for a more honest appraisal of the true incidence of DCI.

Al-Harby SW. The evolving pattern of war-related injuries from the Afghanistan conflict. *Mil Med* 1996; 161:163-4

This is a retrospective study of 922 victims of the Afghanistan war admitted to Mekkah Mukarramah Surgical Hospital, a 120 bed hospital, from April 1987 to April 1989. The range and extent of war related injuries were reviewed. The lower limbs were the most common site of injuries. The ratio of critical area wounds (trunk, head, and neck) to extremity wounds was 0.17, which reflects the lack of early emergency medical care for the wounded. This ratio can be used to monitor and evaluate the efficiency of the evacuation plans in a war situation.

Comment: The hospital in question was in Pakistan - most Afghan war victims wound up in Pakistan. It seems that despite the disorder of war, adequate records were maintained. Over 60% of the injuries were due to land mines. The higher the % of critical wounds to non-critical, the better the early emergency care: most major wars in the last 50 years have been around

30% critical, 70% non-critical. Interesting method of assessing early management.

Westensten NJ et al. Effect of daytime administration of zolpidem and triazolam on performance. *Aviat Space Environ Med* 1996; 67:115-20

Background and Hypothesis. The performance-impairing effects of the short acting imidazopyridine zolpidem (Ambien) were compared to those of triazolam (Halcion) following daytime administration.

Methods. There were 70 male subjects who received oral zolpidem (5, 10, or 15mg), triazolam (0.125, 0.25 or 0.5mg), or placebo at 1,000 hours. Performance on logical reasoning, Column Addition, and Repeated Acquisition (computerised tasks of the Walter reed Performance Assessment Battery) was assessed prior to drug administration, then at 1.5h (estimated peak drug effects) and 6h post administration.

Results. Number of trials completed (TC) and response time (RT) for correct answers on the Logical reasoning (LR) and Column Addition (CA) tasks (expressed as a percentage of pre-drug performance) were compared by triazolam 0.5 mg (TC= 76.6 and 67.4% for LR and CA; RT= 182.1 and 127.0 for LR, CA) and zolpidem 15 mg (TC= 87.0 and 75.8% for LR, CA; RT= 198.7 and 161.8% for LR, CA) at 1.5h post-administration. By 6h post-administration, drug effects on performance had dissipated. Other doses of triazolam and zolpidem failed to impair performance significantly.

Conclusions. These results indicate substantial performance impairment at estimated peak plasma concentrations of both triazolam and zolpidem, at or near doses coinciding with somnogenic efficacy. Thus, the present results suggest no advantage of benzodiazepine receptor-subtype-specific drugs (eg zolpidem). Rather, these results suggest that the performance-impairing effects of both drugs are dose dependent and functionally coupled to their sleep-inducing properties.

Comment: Don't try performing 1.5 hours after taking short acting hypnotics. Of significance was the finding that performance decrement had resolved within 6 hours - shorter than other studies. The hypothesis that non-benzodiazepine hypnotics have less of a performance impairment effect was not supported.

Witztum E et al. The erroneous diagnosis of malingering in a military setting. *Mil Med* 1996; 161:225-229

The paper describes difficulties in diagnosing individuals from different cultures, focusing specifically on cases of erroneous diagnosis of malingering among ultra orthodox Jewish inductees. Twenty-four inductees diagnosed as malingerers by several army psychiatrists were re-examined by the authors and subsequently re-diagnosed as psychotic, suffering from a personality disorder, or mentally retarded. Factors underlying the misdiagnosis are discussed.

Comment: An interesting study. It is true that 'military frameworks are a "classic" ground for malingering' but what is not spelt out is that this, at least

at recruitment, is only true for a conscripted force, and not a voluntary one.

Wiener SL. Strategies for the prevention of a successful biological warfare aerosol attack. *Mil Med* 1996; 161:251-256

Biological Warfare (BW) aerosol attacks are different from chemical attacks in that they may provide no warning/all clear signals that allow the soldier to put on or remove his M17/M40 protective mask. Methods are now being perfected to detect a BW aerosol cloud using airborne (helicopter) pulsed laser system to scan lower altitudes upwind from a troop concentration of corps size, and to sample and analyse the nature of the aerosol within a brief time interval. This system has certain limitations and vulnerabilities, since it is designed specifically to detect a line-type aerosol attack. Provision of, training with, and field use of a lightweight dust mist or HEPA filter respirator for each soldier is proposed for protection against undetected aerosol attacks. This particulate filter respirator would be issued in addition to the M17/M40 mask. Such a BW respirator will be able to purify the soldier's air by removing particles in the 0.3 to 15µm diameter range with an efficiency of 98-100%. Particle size of BW aerosols is in the same range, with an optimum size for high-efficiency casualty production of 1 to 5µm mass median diameter. The proposed BW respirator will be lightweight; will require low inhalation pressures; will be comfortable to wear for long periods; will not interfere with vision, hearing or communication; and will not degrade the overall effectiveness and performance to the degree observed with the M17/M40 masks. Such respirators would be worn as part of a contingency defence against an enemy likely to use BW agents. This respirator could be worn for prolonged periods when under threat of an undetectable BW attack during weather conditions favourable to the success of such an attack (ie low wind velocity and temperature inversion in the

target area). In addition, tactically important assets such as command and control centers and missile batteries can also be protected continuously by air filtration systems powered by electricity (modular collective protection equipment). Vaccinations against anthrax, botulism, Q fever, plague, and tularaemia are now available and immune protection against ricin and staphylococcal toxins appears feasible in the near future. Chemotherapy can also be provided for prophylaxis of infectious agents released on the battlefield. The vaccines and antibiotics can provide back-up protection against and unexpected BW attack during a period when the BW respirator is not in use or malfunctions due to poor seal or filter leak. Enemy sites of biological weapon production, assembly, testing and storage, and delivery vehicles can be targeted for destruction by bombs and/or missiles. An integrated, well-planned, BW defence with multiple components can decrease the likelihood of a successful enemy BW aerosol attack.

Comment: The abstract is nearly as long as the paper itself. As Captain Picard would say 'make it so', and it was. So many holes in this as to being chilling. Such a mask does not exist; the R, D, T & E is still to occur. Even if it was produced, relying on masks to filter out viruses does not seem much chop. The undetected BW attack is not going to be prevented by the presence of the masks, as it is undetected, by definition, unless the masks are always worn - hardly a practical scenario. The emphasis must be on preventing the attack in the first place. What of designer bugs; water or skin transmission; human to human transmission; prolonged BW agent survival times; what about cost???? Successful use of antibiotics in this era of resistance is optimistic. Many viral agents have no vaccine available. Good luck! Oh, yes, it also annoys the hell out of me that in an internationally read journal this paper could be so parochial as to only speak to the US experience.

Conference Report

Aerospace Medical Association 67th Annual Scientific Meeting. May 5-9 1996, Atlanta

James Ross

My first time to this meeting, the largest Aviation Medicine meeting in the world. Usually five concomitant presentations, which of course means I cannot report on all the good ones. Generally I was impressed by the quality of the presentations and the overall scientific standards maintained, (unlike AMMA's semi-equivalent in the US, ASMUS, who's Annual meeting I

attended in 1994, and would not go to again, at least for the scientific content, in a fit).

A highlight was the presentation by the real Apollo 13 mission Flight Surgeon, to place on record the other side of the story from that represented by the film Apollo 13. The film I enjoyed immensely, if it weren't for the regular 'Bash the Flight Surgeon' sessions. After seeing just how far from the truth that part

of the film was, I wonder how fanciful the rest of the screenplay was.

A day was devoted in one of the sessions to Fatigue countermeasures. Many presented here, but the NASA group from AMES research centre, headed by Dr Rosekind, provided much of the information. Dr Rosekind presented a one hour overview of fatigue countermeasures, which was excellent. It was a distillation of the three day course run out of AMES. Very practical and exceedingly well presented.

Acceleration effects was dominated by the Push-Pull effect, being mainly pursued by the Canadians, after the fatal accident the CDF had attributed to the effect (+ve G immediately after -ve G reduces +G tolerance). Cockpit accommodation is one of my interests; that was ably covered, mainly through the efforts to fit a greater percentage of females in aircraft cock-

pits. Other excellent sessions included cockpit ergonomics, the spatial disorientation demonstrator, accident investigation and human factors/stress and fatigue. There may have been others, but I did not hear them.

Naturally there are comments and opinions put forward that you are not always in accord with. There seemed to be a feeling from some of the accident investigation panel that because no-one has so far contracted HIV or HBV from a crash site (that is known about) that therefore the risk is overstated and precautions can be relaxed. Just wait until the first case!

The contacts available in the military and civilian aviation medicine field are legion. That of course is probably what these meetings are best for. I got to see my first Major League Baseball game (Braves 6-5 over the Rockies).

AMMA Update

News and information for members of the Australian Military Medicine Association

Journal

Once again, the journal format has changed a little. I hope members will bear with these changes which are aimed at making the journal more readable, and providing an AMMA information section which will hit you in the eyes (apparently the response to the separate "AMMA Update" sent in June was phenomenal, so I hope this section will have the same impact).

I would be keen to get some feedback (positive and negative) from members.

I have a few articles in the pipeline, but once again I appeal to all members to give some thought to producing something for the journal - it will only ever be as good as its members.

Journal Index

In this issue is a complete list of articles published since *AMM* commenced publication as a newsletter in February 1992. All scientific and interest articles are included in this index.

AMM volumes published are:

- ◆ Volume 1 - 1992
 - Number 1 - February
 - Number 2 - June
 - Number 3 - November
- ◆ Volume 2 - 1993
 - Number 1 - March
 - Number 2 - June
 - Number 3 - October
- ◆ Volume 3 - 1994
 - Number 1 - March
 - Number 2 - June

- Number 3 - November
- ◆ Volume 4 - 1995
 - Number 1 - March
 - Number 2 - July
 - Number 3 - November
- ◆ Volume 5 - 1996
 - Number 1 - May

Obituary

Ian Richardson

It is with deep regret that *Australian Military Medicine* records the passing of Ian Richardson on 2 August 1992.

Ian was a Nursing Officer, specialising in Intensive Care, with the Royal Australian Navy, serving at Balmoral Naval Hospital.

AMMA Conferences

1996

Everyone should now know that the AMMA 5th Scientific Conference will be held at the Hyatt in Canberra from 6 to 8 September 1996. There's still time to register, phone Paula Leishman on (03) 6247 1850.

**Allocated 2 points/hour.
Total CME points: 22.0 in
RACGP QA & CE Program.**

*CME point allocation is not
guaranteed and is subject to
review by the RACGP.*

Conference Committee

Lydia Stevens (06) 266-3821
Andy Robertson (06) 266-3878

1995

The financial result of the 1995 Conference provided a nett surplus to the Association of \$9,604.35 (see Vol 4 Num 3, Nov 1995 for a full report on this conference). Council at its June meeting resolved that \$5,000 would be transferred to the 1996 Conference account.

AMMA AGM

Members are reminded that the Annual General Meeting of the Australian Military Medicine Association will be held at 1630 on Saturday 7 September 1996 at the Hyatt Hotel, Canberra. The Annual Report and Financial Statements of the Association will be presented at that meeting.

Amendment to Rules - Election of Council Members

At the AGM, an amendment to the rules of the Association will be proposed. Details of this have been circulated, and the actual working of the amendments will be available at the AGM.

By way of further explanation, the current method of election permits members to

nominate for only one of eight positions on Council, including the named positions of President, Vice-President, Secretary, Treasurer and Journal Editor. Should a member fail to be elected to the position for which he or she nominates, and all other Council positions are filled at the postal ballot, that member cannot become a member of Council. It is all or nothing (since the ballot is a postal ballot, there is no opportunity for an unsuccessful candidate to nominate for another position).

Under the proposed amendment, two significant changes are made. First, only the positions of President and Vice-President are directly elected by the members; the other named positions are elected by the Council from among its members - there seems no particular reason why those positions need to be directly elected by the members, and this procedure simplifies the election procedure, with only three ballots rather than six being required. Second, a

member can nominate simultaneously for President and Council General Member or Vice-President and Council General Member (but not President and Vice-President together). This allows unsuccessful candidates for the named positions to be included in the ballot for Council General Member during the postal ballot. Hence the all or nothing nature of the ballot is removed.

I hope this further elucidates the proposal.

Russ Schedlich

Defence Appointments

The following AMMA members have been selected for promotion and appointment within the higher Defence Health Services:

- **Graeme Moller** - to Air Vice Marshal, and appointed Surgeon General, Australian Defence Force.
- **Warren Harrex** - to Air Commodore, and appointed

Director General, Air Force Health Services and Director General, Clinical Services.

AMMA Contacts

For general enquires contact:

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Janet Scott (08) 272-7399

Journal

Russ Schedlich (02) 563-4517

Library

Books from the library are available for loan of up to 12 weeks. Contact:

Russ Schedlich

Tel: (02) 563-4517

Fax: (02) 563-4519

Conference & Meeting Calendar

Date	Conference	Venue
30-31 August 1996	Implementation of Nursing Competencies, RCNA	Melbourne
30-31 August 1996	4th Scientific Conference of Diving and Hyperbaric Medicine	Hobart
6-8 September 1996	5th Annual AMMA Conference	Canberra
28 Sept-2 October 1996	84th Annual World Dental Congress	Orlando, USA
20-24 October 1996	4th International Cochrane Colloquium	Adelaide
21-24 October 1996	Engineering and Physical Science on Medicine and Health '96 Conference	Canberra
27-30 October 1995	2nd International Conference on Medical Registration	Melbourne
11-22 November 1996	RAN Medical Officers Underwater Medicine Course	HMAS Penguin, Sydney
14-17 November 1996	Australian Society for HIV Medicine 8th Annual Conference	Sydney
17-22 November 1996	6th International Conference on Emergency Medicine	Sydney
23 November 1996	4th National Symposium on Hepatitis C	Melbourne
2-13 December 1996	ADF Medical Officers NBC Course	SME, Sydney

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CONTRIBUTIONS

for the November issue should be sent to:

The Editor
Australian Military Medicine
PO Box 730
PYMBLE NSW 2073

Deadline is 1st October 1996.

Instructions for Authors:

Articles submitted for publication in *AMM* should conform to the following guidelines:

- two hard copies should be submitted, typed double-spaced on A4 paper (single-side)
- if possible, an electronic copy on an IBM formatted 3.5 inch floppy disc in a standard word processing programme should be submitted
- the text in both hard and electronic copies should be unformatted
- references in the text should be numbered consecutively as they are cited and annotation of the references should accord with the style given in *Index Medicus*. Where there are seven or more authors, list only the first six then *et al*. For example:
Szilagyi M, Dawson RM. Phosgene - A research review. *Aust Mil Med* 1995; 4(2):16-19
- figures and tables should be submitted separately with an indication in the text as to where they should be located
- the originals of all photographs, ECGs, EEGs etc should be submitted to allow high quality reproduction

Articles submitted may be subject to peer review. Articles which have been published elsewhere will only be considered if they are of importance to the field of military medicine, and publication will only proceed with the prior approval of the original publisher.

Australian Military Medicine

Volume 5 Number 2

August 1996.

The Australian Military Medicine Association
Patron

Air Vice-Marshal G.D. Moller, RAAF
Surgeon General, Australian Defence Force

President:	Nader Abou-Seif
Secretary:	Marcus Skinner
Treasurer	Bob Stacy
Journal Editor:	Russell Schedlich
Assistant Editor:	Andrew Robertson

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Australian Military Medicine Association

Annual Report
1996

NOTICE OF 5TH ANNUAL GENERAL MEETING

Notice is hereby given that the 1996 Annual General Meeting of the Australian Military Medicine Association will be held at the Hyatt Hotel, Canberra, at 1630 on Saturday, 7 September 1996.

Any member desiring to bring any business forward at this meeting is to give notice in writing to the Honorary Secretary no later than 7 August 1996.

Marcus Skinner
Honorary Secretary

AUSTRALIAN MILITARY MEDICINE ASSOCIATION

5TH ANNUAL GENERAL MEETING

Hyatt Hotel, Canberra
1630, Saturday 7 September 1996

AGENDA

- | | | |
|----|---------------------------------------|-----------|
| 1. | Minutes of 4th Annual General Meeting | President |
| 2. | President's Address | |
| 3. | Secretary's Report | |
| 4. | Treasurer's Report | |
| 5. | 1997 Fees | Treasurer |
| 6. | 1997 Council | Secretary |
| 7. | 1997 Conference | President |
| 8. | General Business | Secretary |

Australian Military Medicine Association

August 1996

Patron

Air Vice-Marshal G.D. Moller
Surgeon General, Australian Defence Force

President

Nader Abou-seif

Vice-President

Journal Editor and Librarian

Russell Schedlich

Council

Secretary	Marcus Skinner
Treasurer	Bob Stacy
Public Officer	Andrew Robertson
Member	Lydia Stevens
Member	Janet Scott

Secretariat

Leishman and Associates

On behalf of Council, I am pleased to present the Annual Report of the Australian Military Medicine Association together with the Balance Sheet and related Accounts for the year ended 31 June 1996.

Nader Abou-seif

A Time of Change

At this the end of our fifth year, AMMA can look back at a number of changes which have seen us grow from the proverbial twinkle in the eye of a few enthusiasts to an established national association with a membership in excess of 300.

This last year has also seen a new Federal Government with new priorities in Defence, Foreign Affairs and Health which may impact on the practice of the many facets of Military Medicine in Australia.

AMMA has seen changes in its patron - 1995-1996 being the last year that Major General David Rossi had this position. His support to AMMA in its formative years has been of great importance. Also, with the resignation of Chris Maron, AMMA's first treasurer, the Council now has only two members who served on the original Council of 1991.

We approach this year's Annual General Meeting with a sound base, both financially and academically. We look forward to addressing the challenges the future holds with confidence.

AMMA will continue to be a forum for open discussion of issues that face Military Medicine, both in this country and throughout the world. We will endeavour to provide encouragement for those who wish to carry out research in the fields of military medicine through the AMMA Research Grant. We will continue to disseminate information on items of current and historical interest through our journal, Australian Military Medicine. We will provide a forum for the presentation of the best that is Australian Military Medicine in the form of our Annual Conference. and we will applaud the quality of work presented by individual members through the "Weary Dunlop Award".

The aims of AMMA as laid out in each issue of the journal is, I hope, being met in the eyes of our membership.

Council this year is, for the first time, following a strategic plan as laid out at the last AGM with specific roles and responsibilities. As in previous years, Council met as a whole four times this year, twice via teleconference,

as well as maintaining contact on a frequent basis as needed throughout the year. The changes introduced will, one hopes, be seen as a significant stage in the development of a more efficient organisation.

Once again, I encourage you all to become involved in AMMA and all its activities. Your participation will only make us a more representative association and therefore a stronger one. As an independent organisa-

tion, I hope that AMMA can remain a focus for all groups with an interest in Military Medicine. We have forged links between the different disciplines that comprise Military Medicine, between those who actively practise these disciplines in military and civilian arenas and those whose interest is either academic or historical. It is my hope that AMMA will continue to provide for the needs of all these groups.

Secretariat

Total membership for AMMA as at August standards at 372. The Association welcomed 58 new members in the last financial year. The State by state split is:

ACT - 30, NSW - 101, NT - 14, QLD - 37, SA - 43, TAS - 10, VIC - 96, WA - 17, with 10 members unknown addresses.

Finance

Fully audited financial statements and balance sheet will be presented to the Annual

General Meeting in Canberra. The following interim statements are provided.

<i>INCOME</i>	
Annual Conference	12,750.00
Memberships	13,554.30
TOTAL INCOME	26,304.30
<i>EXPENSES</i>	
Accountant	175.00
Annual Conference	2,000.00
Awards	2,000.00
Bank Charges	208.73
Committee Meetings	4,097.10
Merchandise	1,058.94
Newsletter	3,882.00
Postage/Telephone/Stationery	1,341.25
Registration	39.
Secretarial Expenses	7,422.57
TOTAL EXPENSES	22,224.59
SURPLUS	4,079.71

Journal

Australian Military Medicine, the official journal of the Association, continued to be published during the year:

July 1995	Vol 4 No 2	43 pages
November 1995	Vol 4 No 3	36 pages
May 1996	Vol 5 No 1	27 pages

A total of 14 scientific articles were published, of which four were original work, and the remainder review articles. One retrospective on 'Weary' Dunlop was reproduced, and the remainder of the journal included editorials, letters, abstracts and a variety of AMMA news and information.

The format of the journal has continued to evolve so as to make it more readable,

and to highlight important AMMA information. Two particular modifications to the format have been considered, and will be in place with the first issue for 1996-97:

Important AMMA information will now be included in a 'loose' form, most commonly by using the back of the address label with highlighted red overprinting on the front, or as a separate loose enclosed sheet. Previously such information had been bound into the journal for cost saving reasons, however it has become clear that the better response to non-bound information outweighs these cost considerations.

The second important change (which will be first used in the August 1996 edition) is the use of an "AMMA Update" section to replace the "News and Views". The "Update" will be formatted substantially differently to the main body of the journal, using a different

page layout and different font. Its adoption follows the overwhelming response to the loose "Update" forwarded to members in June, and the Editor is grateful to Paula Leishman for the concept.

The Editor continues to receive a trickle of papers and information for publication, however it cannot be too often stressed that the journal will only succeed through the active support of its members, and I would encourage contributions.

There was a slight hiatus in the publication schedule in the early part of the year owing to the Editor's urgent need to complete his treatise prior to a University deadline. This having been successfully met, the publication schedule will return to March, July and November.

1995 Conference

The 4th Scientific Conference was held at the Manly Pacific ParkRoyal from 1 to 3 September 1995. The Organising Committee consisted of:

Andrew Gibson
Ted Kremer
Russ Schedlich

Conference secretariat support was provided by Wyeth Clinical Meetings Service at no charge to the Association.

Sponsorship for the Conference was provided by:

- Bayer
- CSL Pharmaceuticals
- Eli Lilly Australia
- FAI insurance
- GMS Marketing Services
- Macquarie Pathology
- Marion Merrell Dow Australia
- Parke Davis
- Rhone Poulenc-Rore
- Roche
- Sigma Australia
- Wyeth Australia

There were approximately 120 registrants to the Conference, attendance suffering a little because of the conjunction of other scientific conferences around the dates, and the recent return to Australia of the second Rwanda contingent. Registrants came from all states in Australia, and also from the United States..

There were 25 papers presented during the Conference, with a broad array of disciplines and fields of endeavour represented.

The Conference Dinner was graciously addressed by Surgeon Captain 'Sandy' Ferguson, RANR, who recounted his Second World War experiences to an appreciative audience with quiet humour and humility.

Because of the generosity of our sponsors, in particular Wyeth Clinical Meetings Services, and despite the low registration fees, the Conference made a healthy nett surplus of \$9,604.35. Council determined that \$5,000 of this surplus should be donated to the 1996 Conference to help defray the increased running costs which will be incurred by using a commercial secretariat service, Wyeth being unable to assist this year.

"Weary" Dunlop Award

The 'Weary' Dunlop Award of \$500 is given annually for the best paper presented at the Scientific conference.

At the 1995 Conference, Steve Rudzki received the Award for his work on "A Method

of Reducing Recruit Training Injuries". Steve generously donated his prize money back to the Association for suitable use.

Research Grant

Every year, the Association awards a Research Grant of up to \$2,000 to a member who is undertaking suitable research in the field of military medicine.

In 1995, the Council awarded a Grant of \$1,500 to Geoff Quail and Adrian Neath to continue their study on the epidemiology of

morbidity in the Australian Defence Force based on a survey of presentations at selected RAAF Bases.

In 1996, there were no applicants for the Research Grant.

Library

The Association's Library now consists of 69 books. Loans are available for periods of up to 12 weeks, books being generally despatched by post to lenders. The full list of books is attached.

The Library is physically located at the Librarian's home in Sydney.

Borrowing of books has generally tended to be sluggish, probably because of the difficulties associated with the loan process. Members are encouraged to use the borrowing facility, and any suggestions as to how the Library can be made more accessible will be welcomed.

AMMA on the 'Net

In early 1996, AMMA established a home page on the Internet as an initial experimental foray into 21st century communications.

The home page address is:

<http://www.ozemail.com.au/~dxw/amma.html>

Members are encouraged to communicate with AMMA through this facility.

New Members

During the year, AMMA welcomed the following new members:

S Allaburton
A Bennett
A Campbell
L. Conlon
P Cook
J Colvin
M Corkeron
L Crompton
I Davies
J. Dawson
D. Delaney
D Dudley
P. Dunkin
D Emerson
V Efstathis

D Faithful
J. Firman
M Foreman
R. Furzer
G Galvin
C Gerrard
W Gordon-Smith
N Grills
J. Greenham
R Grogan
T Heffernen
J Hilton
C Hughes
P Johnstone
R Jones

K. Keegan
M King
L Kohan
A Lambert
G MacCarrick
L Macleod
C Masterson
R Mills
W Molloy
A Neath
T Nihill
M Pain
S Palfreeman
R Peadon
R Ralph

D Randell
R Rixon
G Robinson
R. Rosen
S. Salleh
R Scott
M Seah
C Skinner
H. Storey
N Tran
C Tsonis
P Yuile

AMMA Library Books

Author	Title	Publisher	Year
Australian Military Medicine Association	Australian Military Medicine Association Membership Records to January 1995	Australian Military Medicine Association	1995
Australian Military Medicine Association	Council Minutes July 1991 to February 1995	Australian Military Medicine Association	1995
Australian Military Medicine Association	Newsletter, Vol 1 No 1 to Vol 3 No 3	Australian Military Medicine Association	1994
Australian Military Medicine Association	Proceedings of the AMMA 4th Annual Conference	Quickcopy Audio Recording Services (12 tapes)	1995
Australian War Memorial	H.M.A.S. Mk. III	Australian War Memorial, Canberra	1944
Australian War Memorial	Jungle Warfare. With the Australian Army in the South-West Pacific	Australian War Memorial, Canberra	1944
Australian War Memorial	Soldiering On. The Australian Army at Home and Overseas	Australian War Memorial, Canberra	1942
Australian War Memorial (ed)	As You Were. A Cavalcade of Events with the Australian Services from 1788 to 1947	Australian War Memorial, Canberra	1947
Australian War Memorial (ed)	As You Were. A Cavalcade of Events with the Australian Services from 1788 to 1948	Australian War Memorial, Canberra	1948
Benson CI	The Man with the Donkey. John Kirkpatrick Simpson. The Good Samaritan of Gallipoli	Hodder & Stoughton	1965
Brereton FS	The Great War and the R.A.M.C.	Constable and Company Ltd., London	1919
British Medical Journal	War Wounds and Air Raid Casualties	HK Lewis & Co, 1st Edition	1939
Caldwell, R	Military Hygiene	Bailliere, Tindall & Cox, London, 2nd Edition	1910
Clarke BL	Behind the Wire. The Clinical Diary of Major Burnett Clarke AAMC	Amphion Press, 1st Edition	1989
Cole M	Journey to the Fourth World	Lion Publishing, Tring, UK (autographed)	1981
Connolly R, Wilson R (eds)	Medical Soldiers. 2/10 Australian Field Ambulance 8 Div. 1940-45	2/10 Australian Field Ambulance Association	1985
Crouch J	A Special Kind of Service. The Story of the 2/9 Australian General Hospital	Alternative Publishing Co-operative Ltd, Chippendale, 1st Edition	1986
Deane-Butcher W	Fighter Squadron Doctor	Deane-Butcher (autographed)	1989
Deeter DP, Gaydos JC (eds)	Occupational Health. The Soldier and the Industrial Base	The Textbook of Military Medicine, Part III, Volume 2	1994
Department of the Army	50 Years of Accomplishments in Army Research and Development	Department of the Army, United States of America	
Dieuaid FR	Civilian Health in Wartime	Harvard University Press, Cambridge, Massachusetts	1942
Dixon P	Amazon Task Force	Hodder & Stoughton, London (autographed)	1984
Dixon R	On the Psychology of Military Incompetence		
Dunant, JH	A Memory of Solferino. (Un souvenir de Solferino)	Cassell & Co, Ltd, London	1947
Dunlop EE	The War Diaries of Weary Dunlop. Java and the Burma-Thailand Railway 1942-45	Viking Books, Ringwood, Aust	1990
Elliot G	Twentieth Century Book of the Dead	Allen Lane. The Penguin Press, London	1972
Fidlon PG, Ryan RJ (eds)	The Journal of Arthur Bowes Smyth: Surgeon, Lady Penrhyn 1787-1789	Australian Documents Library, Sydney	1979
Goodman RD	A Hospital at War. The 2/4 Australian General Hospital 1940 - 1945	Boolarong	1983
Goodman RD	A Hospital at War. The 2/4 Australian General Hospital 1940 - 1945	Boolarong	1983
Goodman RD	Hospital Ships	Boolarong, Brisbane	1992
Goodman, RD	Our War Nurses. The History of the Royal Australian Army Nursing Corps 1902-1988	Boolarong, Brisbane	1988
Gurner J	The Origins of the Royal Australian Army Medical Corps	The Hawthorn Press, Melbourne	1970
Halstead, Gay	Story of the RAAF Nursing Service 1940 - 1990	Nungurner Press, Metung, Aust, 1st Edition	1994
Halstead, Gay	Story of the RAAF Nursing Service 1940 - 1990	Nungurner Press, Metung, Aust (signed by the author, number 77 of 1000), 1st Edition	1994
Hamilton, T	Soldier Surgeon in Malaya	Angus & Robertson, Sydney	1957
Harrison A (ed)	Grey and Scarlet. Letters from the War Areas by Army Sisters on Active Service	Hodder & Stoughton, London	1944
Hayden R	Elementary Hygiene. General and Naval	US Naval Institute, Annapolis US	1939
Home Office	Medical Treatment of Gas Casualties, Air Raid Precautions Handbook No 3	LF Johnston, Canberra, 1st Edition	1937
International Committee of Military Medicine	International Review of the Armed Forces Medical Services	International Committee of Military Medicine, Volume 66 Nos 7/8/9	1993
James WD (ed)	Military Dermatology	The Textbook of Military Medicine, Part III, Volume 3	1994

Author	Title	Publisher	Year
James WD (ed)	Military Dermatology	The Textbook of Military Medicine, Part III, Volume 3	1994
Jones FD, Sparacino LR, Wilcox VL, Rothberg JM (eds)	Military Psychiatry: Preparing in Peace for War	The Textbook of Military Medicine, Part 1, Volume 3	1994
Jones FD, Sparacino LR, Wilcox VL, Rothberg JM (eds)	Military Psychiatry: Preparing in Peace for War	The Textbook of Military Medicine, Part 1, Volume 3	1994
Maisel AQ	Miracles of Military Medicine	Duell, Sloan & Pearce, New York	1943
Manson-Bahr PH	Manson's Tropical Diseases. A Manual of Disease of Warm Climates	Bailliere, Tindall & Cassell, London, 16th Edition	1966
Nash RW	Medical Stores	RW Nash, Bungendore Aust	1980
O'Keefe BG	Medicine at War. Medical aspects of Australia's involvement in Southeast Asia 1950-1972	Allen & Unwin, St Leonards Aust	1994
Pearce C	Beyond the Lagoon. Hoverdoctors to Papua New Guinea	Hodder & Stoughton, Rydalmere Aust	1993
Pearn J (ed)	Pioneer Medicine in Australia	Amphion Press, Brisbane, 1st Edition	1988
Quick CM (ed)	Conventional Warfare. Ballistic, Blast and Burn Injuries	The Textbook of Military Medicine, Part I, Volume 5, 1st Edition	1990
Quick CM (ed)	Conventional Warfare. Ballistic, Blast and Burn Injuries	The Textbook of Military Medicine, Part I, Volume 5, 1st Edition	1990
Revell AL	Haslar. The Royal Naval Hospital	The Gosport Society, Gosport UK, 2nd Edition	1984
Richards R, McEwan M	The Survival Factor	Kangaroo Press (presented to AMMA and signed by R Richards)	1989
Rogers L	Guerilla Surgeon. A New Zealand surgeon's wartime experiences with the Yugoslav Partisans	Collins, London (signed by the author)	1957
Royal Navy	Handbook of the Royal Naval Sick Berth Staff. BR 888	His Majesty's Stationery Office	1944
Seagrave GS	Burma Surgeon	Dymocks Book Arcade, 2nd Edition	1945
Seagraves GS	Burma Surgeon Returns	Dymocks Book Arcade Ltd, Sydney, 1st Edition	1946
Staines DR	Physical fitness, obesity and naval occupation	University of Sydney (MPH Treatise)	1984
Sarr A	Neville Howse VC. Biography of an Authentic Australian Hero	Les Baddock & Sons Pty Ltd, Sydney (signed by the author)	
Steward HD	Recollections of a Regimental Medical Officer	Melbourne University Press	1983
Strong RP, Swift HF, Opie EL et al	Trench Fever. Report of Commission. Medical Research Committee. American Red Cross	Oxford University Press, Oxford	1918
The War Office	Royal Army Medical Corps Training	Modern Printing company Pty Ltd, Melbourne	1941
Tyquin MB	Gallipoli: The Medical War. The Australian Army Medical Services in the Dardanelles Campaign of 1915	New South Wales University Press, Sydney	1993
Walker AS	Clinical Problems of War	Australian War Memorial, Canberra. (Australia in the War of 1939-1945, Series 5, Volume I)	1952
Walker AS	Middle East and Far East	Australian War Memorial, Canberra. (Australia in the War of 1939-1945, Series 5, Volume II)	1962
Walker AS	The Island Campaigns.	Australian War Memorial, Canberra. (Australia in the War of 1939-1945, Series 5, Volume III)	1957
Walker AS, et al	Medical Services of the RAN and RAAF	Australian War Memorial, Canberra. (Australia in the War of 1939-1945, Series 5, Volume IV)	1961
Walker RI, Cervený TJ (eds)	Medical Consequences of Nuclear Warfare	The Textbook of Military Medicine, Part I, Volume 2	1994
War Office	Royal Army Medical Corps Training	Harrison and Sons, London	1914