

Occupational and environmental health in the ADF

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Introduction

ADF personnel are arguably exposed to the most diverse range of occupational and environmental hazards of any Australian workforce. Controlling these hazards is complicated not only by the number, size and complexity of ADF workplaces but also by its workforce demographics.

ADF workplace hazards significantly impact the physical and mental health of current and ex-serving personnel. High rates of preventable workplace illness and injury (in particular musculoskeletal injuries and mental health issues) indicate the need to improve the management of the occupational and environmental health hazards associated with all deployed and non-deployed ADF workplaces, with better emphasis on prevention rather than treatment.

It therefore seems reasonable that the ADF's health services should be premised on an occupational and environmental health paradigm. While the details of such a paradigm are beyond the scope of this article, it seems evident that, among other attributes, the resultant health care delivery model would include military and civilian occupational and

environmental physicians. These would not only perform occupational and environmental health policy and related roles but also provide workforce rehabilitation and other clinical primary health care services, alongside general practitioners in both garrison and operational settings.

However, the current health capability gaps between the current ADF health service delivery model, and one reflecting an occupational and environmental health paradigm suggest the need to reassess the fundamental inputs to capability for Joint Health Command and the Defence Work Health and Safety Branch. The reassessment should facilitate inputs to capability that reflect an occupational and environmental health paradigm, leading to a genuinely holistic and sustainable workforce-based ADF health service delivery model.

ADF workplaces

The ADF arguably has the most diverse range of workplaces in Australia. The allocation of its permanent and reserve personnel to the Services is shown at Table 1. When not deployed, they work in over 60 major bases and other facilities throughout Australia.

Table 1: ADF personnel allocation, 2014-151

Service	Permanent	Active Reserve	Allocation to (or otherwise providing direct or indirect support)
Navy	13,921	4750	47 commissioned and three non-commissioned ships
Army	29,010	14,166	wide range of combat and other deployable land units
Air Force	13,991	4316	259 aircraft
Totals	56,992	23,232	80,224

While many occupational and environmental health hazards are not unique to the ADF, compared to other Australian workforces its personnel are arguably exposed to the most diverse range. Examples include:

- Biological hazards, such as vector-, food- and water-borne infectious diseases;
- Physical hazards, such as climate extremes (both heat and cold), noise and vibration, and ionising and non-ionising radiation;
- Chemical hazards, such as heavy metals, asbestos, fuel and diesel exhaust, in the form of dusts, mists, fumes and/or vapours;
- Psychosocial hazards, such as shiftwork, fatigue, social/family isolation, and (regrettably) various forms of unacceptable behaviour such as bullying/harassment; and
- Ergonomic hazards, such as manual handling.

A unique characteristic of the ADF workforce pertains to its potential exposure to hazards that are deliberately intended to cause harm. These include physical hazards from weapons such as small arms, grenades, mortar and artillery rounds, sea-, land- and air-launched missiles, sea and land mines, and torpedoes, all of which can cause death or injury secondary to penetrating wounds, blunt trauma, blast injuries and/or burns. Nuclear and other radiological weapons pose additional physical hazards, as do biological hazards from weaponised bacterial viruses and toxins, and chemical hazards from weaponised blistering, choking and nerve agents.²

All these ADF workplace hazards require or are amenable to being managed using an occupational and environmental health paradigm.³

The ADF workforce

The ADF has one of the largest workforces in Australia. In 2014-15, it had 56,922 permanent and 23,232 active reserve personnel (totalling 80,154), of whom 2241 were deployed.⁴ These numbers do not include more than 20,000 inactive reserve personnel.⁵ By comparison, the Australian Public Service in June 2013 comprised 152,230 permanent and 15,027 non-ongoing (contract) employees.⁶ The three largest private employers in Australia in

2015 were Wesfarmers (205,000), Woolworths (202,000) and Rio Tinto (55,000).⁷

With 214 entry-level jobs alone across all three Services, the ADF also probably has one of the most complex workforces in Australia.⁸ ADF entrants are also required to meet demanding entry medical standards, while career ADF members have to maintain rigorous retention medical standards.

The ADF workforce also has a number of demographic characteristics specific to its occupational and environmental health requirements. For example, all serving ADF members are over 17 years of age and virtually all are under 65, whereas only 53 per cent of Australia's civilian population falls within these age parameters.⁹ Furthermore, unlike a number of other national military forces, the ADF's health services do not provide care for family members or veterans. The ADF population requiring health services is therefore exclusively a working-age population.

Along similar lines, around 30 per cent of permanent ADF members are under 25, which is more than double the percentage of the Australian population aged 15-25.¹⁰ The relative youth of the ADF workforce has implications regarding their medical presentations, in particular those related to risk-taking behaviours (including alcohol and other drug use), workplace- and sports-related musculoskeletal injuries, and mental health issues.

Also, around 85 per cent of both permanent and reserve ADF members are male, compared to about 55 per cent of the Australian civilian workforce.¹¹ This also has implications regarding illnesses and injuries secondary to various risk-taking behaviours among male and female ADF personnel, as well as the requirement to provide workplace and other health care services for a small but very important proportion of pregnant women.

ADF personnel also have relatively short periods of service (36 per cent of permanent ADF members had served less than five years in 2011),¹² implying high personnel turnover rates. Studies have confirmed that higher numbers of less-experienced employees tend to increase workplace illness and injury rates.¹³

ADF personnel also typically have high geographic mobility. Using Navy as an example,

two-thirds of its 14,000 or so permanent personnel are posted to shore establishments and other ADF organisations; the remaining one-third are posted to ships, one-third of which are at sea at any one time.¹⁴ All its permanent personnel participate in a three-year posting cycle, which equates to some 4700 planned personnel movements alone every year. Besides creating a challenging continuity of health care setting, such mobility has important workplace health implications, particularly regarding the nature and extent of mental health issues among Navy personnel, and by extension the other Services.

The ADF population is therefore medically selected, of young working age, geographically mobile, has high turnover rates, and is (still) predominantly male. Rather than reflecting a typical civilian general practitioner dependency per the broader Australian community, the ADF is first and foremost a workforce population.

ADF veterans

In 2015, Australia had about 339,000 veterans, including 150,200 with peacetime-only service.¹⁵ Of the total, 61.4 per cent were receiving health care services from the Department of Veterans' Affairs (DVA) for service-related conditions. In 2014-15, the cost of these services was \$5.525 billion.¹⁶ If the cost was borne (and funded) by Defence rather than DVA, it would constitute 15.9 per cent of a recalculated Defence budget, compared to around 9.5 per cent of GDP in health costs for the entire Australian population.¹⁷

A striking characteristic of ADF service therefore pertains to the high treatment cost of service-related medical conditions (even for personnel with peacetime-only service), despite high recruiting and retention health standards.

Furthermore, 'Gulf War syndrome', depleted uranium exposure, mild traumatic brain injury, post-traumatic stress disorder, traumatic amputations and military suicide have dominated the attention of political and military leaders, veterans' groups and the media over the last 25 years in Australia and elsewhere.¹⁸ Many of these injuries have become the 'signature wounds' of multiple conflicts in which Australia and its allies have participated in recent decades.¹⁹

However, these conditions have also diverted attention from lower profile yet often preventable

diseases and non-battle injuries. For example, of the 62,087 US military medical evacuations from the Middle East area of operations in the ten years from October 2001, 81 per cent were not for 'signature wounds' but for diseases and non-battle injuries, about half of which were 'musculoskeletal injuries, mental disorders and ill-defined conditions'.²⁰

Occupational and environmental physicians in Australia

In 2014, the Australian health care system had 98,807 medical practitioners in more than 80 specialties, including 32,050 general practitioners and 55,792 other specialists.²¹ The Royal Australasian College of Physicians represented 19,210 Australian specialist and trainee specialist doctors from 33 specialties in various divisions, chapters and faculties.²² Pertinently, the College's Australasian Faculty of Occupational and Environmental Medicine represented 492 physicians and trainees who:

[P]rovide specialist knowledge to ensure a healthy, productive workforce and connect a workplace with the diverse range of health services necessary to optimise the health and wellbeing of employees. [Occupational and environmental physicians] work with governments, regulators, employers, workers and other health professionals to ensure positive health outcomes for workers and employers.²³

Its website defines the terms 'occupational' and 'environmental' medicine as:

'Occupational medicine' takes a preventative approach to health and safety in the workplace by looking at how a work environment can affect a person's health, and how a person's health can affect their work.

'Environmental medicine' is primarily concerned with the human health impacts of industrial practices on the broader environment outside of the industrial site.

The Faculty has maintained an interest in the health care of current and ex-serving ADF members since its inception in 1982. This is demonstrated by the high proportion of its members with extensive military and other experience of working with the ADF and/or DVA. Indeed, two of its last five presidents have previous ADF service.

Occupational and environmental physicians are also specialists in setting the pace and

direction of workplace-based rehabilitation, and negotiating with employers and other stakeholders to achieve optimal return-to-work outcomes.²⁴ Their skills and expertise are therefore highly relevant not only for current and ex-serving ADF members but also ADF supervisors, commanders and personnel managers, as well as DVA.

The current state of occupational and environmental health in the ADF

Although the Defence Work Health and Safety Branch and the Services have reasonably robust occupational and environmental safety organisations, their occupational and environmental health capabilities are quite limited. For example, as of August 2016, the ADF had only one uniformed occupational and environmental physician, the Defence Work Health and Safety Branch had one such civilian physician, and Joint Health Command had one vacant civilian position. Among other limitations, this precludes the ADF from effectively putting the 'health' into 'work health and safety'.

Moreover, the ADF appears unique in that, unlike other employers, its health services provide employee health care without ascertaining whether or not their clinical presentations are work-related. For example, Joint Health Command clinical records routinely document patient details such as their Service and rank but not their rate (Navy), corps (Army) or mustering (Air Force), which indicate the jobs they perform.

Furthermore, Joint Health Command does not collect or report work-related illness/injury data, or record lost time or restricted duties, or identify the ensuing health care costs (albeit some of this information is provided via a separate non-health reporting process managed by the Defence Work Health and Safety Branch). Yet this baseline health information is essential, not only for monitoring the effectiveness of the ADF's occupational and environmental health services but also accounting for the health care costs incurred by Joint Health Command, as well as the compensation and veteran health care costs incurred by DVA.

Moreover, Joint Health Command does not include occupational and environmental physicians as part of its multidisciplinary rehabilitation teams, despite anecdotal evidence

that 30-40 per cent of clinical presentations to a typical ADF medical practitioner are for generally preventable musculoskeletal injuries. About half of these are workplace-related (typically related to manual handling or slips/trips/falls); the other half tend to be sports-related.

Also anecdotally, another 30-40 per cent of clinical presentations are for generally preventable mental health injuries. About half of these members lack psychological robustness for whom the ADF has been a poor career choice; the other half tend to be members who are psychologically robust but are not coping with excessively demanding or otherwise dysfunctional ADF workplaces or personnel management practices. This means that only the remaining 20-40 per cent of ADF clinical presentations are for conditions typically seen in an equivalent Australian civilian population.

These assertions are supported by data from the ADF's Health Surveillance System (EpiTrack), which showed that in 2007-08 and 2008-09, the five most common medical conditions in the ADF were injuries and musculoskeletal disorders, respiratory tract conditions, skin conditions, ill-defined conditions, and ear, nose and throat disorders, while the five most common ADF conditions resulting in sick leave were injuries and musculoskeletal disorders, respiratory tract conditions, mental health disorders, stress reactions, ill-defined conditions, and intestinal infectious disease.²⁵

By comparison, the five most common Australian civilian clinical presentations in 2013 were hypertension, (childhood) immunisations, upper respiratory tract infections, (non-work-related) depression, and diabetes.²⁶ Consistent with the relationship between battle- and disease/non-battle injury casualty rates throughout military history, it is evident that the overwhelming majority of ADF clinical presentations are not combat-related.²⁷

It is also the case that the non-deployed/garrison health services provided by Joint Health Command do not reflect an occupational and environmental health paradigm. Joint Health Command provides these health services in accordance with the extant Service Level Agreement between the Vice-Chief of the Defence Force and the single-Service Chiefs. Although the Defence Minister can vary the treatment services provided by Joint Health

Command (in order to maintain fitness for duty while reflecting the facilities available), the agreements to date otherwise only mandate compliance with the *Health Insurance Act 1973* and the *National Health Act 1953*, which ensures that ADF personnel receive the same level of non-deployed health care as Australian civilians.²⁸

However, although the current Service Level Agreements refer to occupational and environmental health services, none have so far required garrison health services to facilitate local unit compliance with the *Work Health and Safety Act 2011*. This limitation, combined with a lack of military occupational and environmental physicians, restricts garrison rehabilitation and other clinical services to that provided by general practitioners and other non-specialist practitioners.

The lack of occupational and environmental health support provided by Joint Health Command is not counterbalanced by that provided by the Defence Work Health and Safety Branch. The latter's focus on higher-profile workplace exposures such as asbestos, fuel, diesel exhaust fumes, surface finishes and fire-fighting foam does not address the lower profile yet far higher volume (and cost) of preventable workplace-related musculoskeletal and mental health injuries being treated by garrison health staff.

The need for a revised health delivery model

High workplace illness and injury rates suggest the need to better manage the occupational hazards associated with all ADF workplaces (whether deployed or non-deployed), in particular emphasising prevention rather than treatment. The earlier definition of occupational medicine indicates that this entails occupational and environmental physicians and other health practitioners who can specifically consider, in the first instance, 'how workplaces affect employee health'.

To this end, Derek Licina and colleagues have referred positively to a Joint Health Command concept paper, prepared for the Defence Work Health and Safety Committee, which outlined options to support Defence's 'Occupational Medicine/Occupational Hygiene Project'.²⁹ However, Licina *et al* also describe how some related capability shortfalls remain outstanding, despite these having been raised

in 2009 by Comcare during its investigation into hazardous substances in ADF and Defence workplaces, while others were identified at the 2001 Board of Inquiry into chemical exposure by workers involved in the maintenance of F-111 fuel tanks.³⁰

There is also the need for occupational and environmental physicians, and other health practitioners, to consider 'how employee health affects their ability to work'. For the ADF, this means ensuring that commanders, managers and supervisors are adequately informed of the health status of their personnel, in particular whether their medical condition(s) limits or prevents them from working and, vice-versa—that is, whether their work makes their medical condition(s) worse.

The inappropriate employment of medically-unsuitable personnel poses a potential threat both to the individual and their unit's mission.³¹ Evacuating personnel with known pre-existing conditions also wastes assets and poses operational hazards to other personnel. All clinical ADF health staff therefore must consider medical suitability for employment and deployment at all patient presentations. All actions arising should comply with the 'Temporarily Medically Unfit' process, the ADF Medical Employment Classification system and the relevant single-Service references.³² Anecdotal evidence suggests this takes up to 30-40 per cent of an average military general practitioner's total workload.

However, garrison medical officers cannot assess medical suitability without fully understanding the jobs their patients perform in the ADF workplace. Acquiring this understanding typically takes 12 months; part-timers take longer, and sessional general practitioners are unable to acquire it without prior service experience.

This assertion is supported by studies indicating that medical fitness-for-work certification can be challenging for civilian general practitioners because of a combination of confidentiality issues inherent to the doctor-patient relationship; the general practitioner's patient advocacy role; consultation time pressures; a lack of occupational health expertise; and a lack of knowledge of the workplace.³³

Other studies indicate that some civilian general practitioners do not accept their

responsibilities as to how they should manage long-term work absence, work disability and unemployment.³⁴ Furthermore, balancing the needs of commanders against those of their patients can pose ethical dilemmas for health staff. Civilian health practitioners may also be required to default to the latter position by their professional registration authorities.³⁵

In summary, although assessing health suitability for employment and deployment is clearly an occupational and environmental health function, it is not recognised as such with respect to the fundamental inputs to capability for either Joint Health Command's garrison health services, or for the Defence Work Health and Safety Branch.

Although the ADF's deployable environmental health services are reasonably robust, media articles indicate significant preventive management shortfalls for ADF environmental hazards in the base setting.³⁶ The Australasian Faculty of Occupational and Environmental Medicine's website indicates that in collaboration with other occupational and environmental health professionals, garrison occupational and environmental physicians can proactively help limit the health impacts of ADF industrial practices on nearby civilian communities and the broader environment.

Conclusion

ADF personnel are arguably exposed to the most diverse range of occupational and environmental hazards of any Australian workforce. Controlling these hazards is complicated by the number, size and complexity of the ADF's workplaces, and its workforce demographics.

Workplace hazards significantly affect the physical and mental health of ADF personnel. High rates of preventable workplace illness and injury suggest the need to better manage the occupational and environmental hazards associated with all deployed and non-deployed ADF workplaces, with increased emphasis on prevention rather than treatment.

It therefore seems reasonable that the ADF's health services should reflect a paradigm premised on the Australasian Faculty of Occupational and Environmental Medicine's definitions of occupational and environmental medicine. Among its other attributes, the resulting health care delivery model would

include military and civilian occupational and environmental physicians, who not only can perform occupational and environmental health policy and other roles but also provide workforce rehabilitation and other clinical primary health care services alongside general practitioners, in both the garrison and operational settings.

However, the current state of the ADF's occupational and environmental health services, and the small number of civilian specialist practitioners within the Australasian Faculty of Occupational and Environmental Medicine, suggests that a mature health delivery model would take 10-15 years' sustained effort with respect to occupational and environmental physicians alone.³⁷

This suggests an urgent need to reassess the fundamental inputs to capability for Joint Health Command and the Defence Work Health and Safety Branch. The reassessment should facilitate inputs to capability that reflect an occupational and environmental health paradigm, leading to a genuinely holistic and sustainable workforce-based ADF health service delivery model by 2030.

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Disclaimer

The views expressed in this article are the author's,

and do not necessarily reflect those of the RAN, the Australasian Faculty of Occupational and Environmental Medicine, or any of the other organisations mentioned.

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