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- Completing The Hero's Journey: An Integrative Psycho-Spiritual Framework Reimagining The Veteran Journey Through Shadow to Self-Compassion and Sacred Purpose
- United States Service Members' Resilience and Social Support Resources at Post-Deployment
- 2026 AMMA Conference Abstracts and Poster Presentations

The Journal of the Australasian Military Medicine Association





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The Australasian 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.

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Editorial

Knowledge Management

The JMVH Website - <https://jmvh.org/> - is currently being redeveloped and the new website should go live in the near future. This will give an improved experience, enabling enhanced searching of the JMVH Online First, podcasts, and current and past articles. The ADF Health articles will be complete, with the addition of the articles from 2009-2011 and will be searchable for the first time. This will enhance further interaction with the JMVH, including for researching future articles, developing evidence-based policy and utilising the articles for training and education. The University of Western Australia has recently begun offering microcredentials in Foundations of Military Medicine (<https://www.uwa.edu.au/study/uwa-plus/micro-credential-foundations-of-military-medicine>) and Medical Management of Radiation Injuries (<https://www.uwa.edu.au/study/uwa-plus/micro-credential-medical-management-of-radiation-injuries>), which are designed to articulate into a future postgraduate in military medicine. These courses utilise some of the excellent articles available through the JMVH Website.

Our fourth issue of 2026 contains a range of articles on diverse topics spanning infectious disease threats, post-deployment support, strength training and operational readiness, long term health conditions, veteran's mental health, and spiritual wellbeing. This issue also includes the Abstracts for the upcoming Sydney 2026 AMMA Conference, which cover a wide spectrum of military and veterans' health areas. We continue to attract an increasing number and range of articles, including from overseas, as demonstrated by several of the articles in this issue. Other military and veterans' health articles, however, are always very welcome, and we would encourage all our readers to consider writing on their areas of military or veterans' health interest. We would particularly welcome papers based on presentations being given at the Sydney 2026 AMMA Conference, but welcome any articles across the broader spectrum of military health.

Dr Andy Robertson, CSC, PSM
Commodore, RAN
Editor-in-Chief

Completing the Hero's Journey: An Integrative Psycho-Spiritual Framework Reimagining the Veteran Journey Through Shadow to Self-Compassion and Sacred Purpose

P Devenish-Meaers

Abstract

Military veterans living with post-traumatic stress disorder (PTSD) often struggle with psychological, moral, spiritual and existential wounds that exceed the reach of conventional symptom-focused treatments. Through a search for and critical synthesis of interdisciplinary psychological and psycho-spiritual literature, the paper demonstrates how archetypal narratives, shadow integration, compassion-based emotional regulation and post-traumatic growth (PTG) processes can converge to support veterans' identity reconstruction and reintegration. Building on these findings, the paper proposes an innovative integrative framework that draws together Joseph Campbell's mythological monomyth, Jungian analytical psychology, Robert Wicks' resilience-oriented practices, and Kristin Neff's self-compassion research to address the deeper meaning-making dimensions of trauma. This approach reframes trauma not solely as pathology but as a transformative, often spiritual, journey requiring narrative coherence, tenderness, moral repair and renewed purpose. The resulting framework offers clinicians, chaplains and peer supporters a holistic, albeit new, model that honours veterans' psychological, spiritual and relational realities while fostering healing and growth. While much more research is needed, there seems to be immense potential to use such frameworks in terms of trauma-informed veteran care, which honours the archetypal dimensions of the warrior's journey while fostering psychological growth and post-traumatic development. Finally, limitations and future research directions are discussed.

Keywords: PTSD, veterans, Jungian psychology, mythology, positive psychology, self-compassion, PTG, resilience

Introduction

PTSD among military veterans remains one of the most complex and persistent challenges in contemporary mental health care, not only because of the severity of symptoms but because combat trauma disrupts meaning, identity and moral orientation at their foundations. Underscoring the urgency of new, innovative care, it is known that military service exposes individuals to potentially traumatic experiences that fundamentally alter their psychological landscape. Between 11% and 30% of veterans who served in Iraq and Afghanistan develop PTSD, with rates varying by deployment factors and combat exposure.¹

Traditional evidence-based treatments such as Prolonged Exposure (PE) and Cognitive Processing Therapy (CPT) demonstrate efficacy. Yet, dropout rates remain high, and many veterans seek alternatives that resonate more deeply with their experiences and search for healing and meaning.² In terms of this and beyond well-established clinical care, the veteran's journey through trauma, treatment and reintegration mirrors archetypal patterns found across mythological traditions.

While evidence-based treatments such as PE and CPT provide important tools, many veterans report that these approaches fail to address the existential and psycho-spiritual dimensions of their suffering. Increasingly, scholars and clinicians are turning

towards integrative frameworks that acknowledge trauma as a crisis of meaning rather than merely a dysregulation of fear. Mythology, depth psychology and positive psychology each offer distinct yet complementary insights into how individuals navigate profound disruption and transformation. Bringing these traditions into dialogue provides a promising pathway for understanding the veteran's journey through trauma, recovery and reintegration.

When nearly one in three service members develop PTSD, and almost half of those who begin treatment discontinue prematurely, the field must look beyond incremental refinements of existing protocols to consider fundamentally different approaches. The existential weight of combat trauma, characterised by profound questions of meaning, identity disruption, moral injury, and what veterans themselves often describe as 'soul wounds', suggests that purely symptom-focused interventions may be addressing only surface manifestations of deeper psychological and spiritual ruptures. This recognition has prompted increasing interest in psycho-spiritual frameworks that honour the transformative nature of combat experience while providing pathways towards integration and healing.

For many military veterans, healing from combat trauma encompasses a spiritual journey in its broadest, most inclusive sense: a profound quest for meaning, moral reconciliation, renewed purpose and restored connection to oneself, others and something transcendent—whether understood through religious faith, philosophical reflection, connection to nature, creative expression or the simple yet profound experience of belonging and mattering in the world. The need for this spiritual dimension, which is a key motivator for the paper, distinct from but often intertwined with psychological healing, addresses the existential ruptures and 'soul wounds' that veterans themselves frequently describe, acknowledging that combat trauma

disrupts not only neurobiological functioning but also one's fundamental sense of identity, moral orientation and place in the human community.

In these contexts, and of note, an emphasis on integrating spiritual frameworks, including culturally rooted myths, into trauma treatment is emerging. This argues that spiritual narratives can complement psychological care by addressing existential meaning and moral injury, which are common in veteran PTSD.³

Recent scholarship highlights a growing recognition that veterans' healing requires more than symptom reduction. It demands engagement with the spiritual,

existential, and meaning-making dimensions of trauma. Captari and Worthington³ demonstrate that spiritual narratives can help veterans reinterpret suffering and rebuild coherence after moral injury, while Nieuwsma et al. show that spiritually integrated care directly addresses the moral and existential wounds that traditional PTSD treatments often overlook.⁴

Complementing these findings, Smith-MacDonald et al. identify spiritual resilience as a significant predictor of post-traumatic growth (PTG) among veterans,⁵ underscoring the importance of inner purpose and meaning in long-term recovery. Yet despite these promising developments, psycho-spiritual approaches remain fragmented across disciplines. The emerging research signals a powerful opportunity: to weave mythological, Jungian, spiritual and positive psychology resources into a unified model that honours veterans' inner worlds while supporting identity reconstruction, moral repair and renewed purpose. What is needed now is deeper integration: an approach that bridges narrative, archetypal, spiritual and compassion-based practices into a coherent, holistic pathway for veteran healing.

Motivated by the need to augment veteran care with psycho-spiritual action, this paper undertakes a critical synthesis of diverse psycho-spiritual perspectives that converge on understanding trauma as a meaning-making crisis and a catalyst for identity transformation. By examining depth psychological approaches, existential therapies, narrative methodologies and contemporary positive psychology research, this synthesis aims to identify theoretically coherent and clinically applicable frameworks for veteran PTSD care that extend beyond symptom management towards genuine healing and PTG.

The search for relevant psycho-spiritual themes and related frameworks requires an examination of diverse spiritual and psycho-spiritual work that converges around understanding trauma not merely as a disorder to be eliminated but as a meaning-making crisis that demands engagement with questions of identity, purpose and the human capacity to find growth through suffering.

This paper critically synthesises these theoretical traditions to propose an integrative framework for veteran PTSD care. By examining convergences between mythological structures, Jungian psychology and positive psychology interventions, this synthesis aims to identify theoretically coherent and clinically applicable approaches that honour veterans' experiences while promoting PTG.

Method

Critical synthesis approach

This paper employs a critical synthesis methodology to integrate diverse theoretical perspectives and empirical findings across mythological, depth psychological and positive psychology literatures.⁶ Unlike systematic reviews that prioritise breadth and replicability, critical synthesis emphasises theoretical integration, conceptual analysis and the generation of novel frameworks through interpretive analysis.⁷

Literature selection strategy

Literature was selected through purposive sampling guided by theoretical relevance to the synthesis aims. Sources were identified through database searches (PsycINFO, PubMed, Google Scholar) using terms including 'veteran PTSD', 'self-care', 'Jungian therapy', 'mythology', 'meaning', 'compassion', 'post-traumatic growth' and 'archetypal psychology'. Key and empirical studies that examined these approaches with veteran or trauma-exposed populations or that demonstrated transferable potential to address purpose, healing, inner meaning and existential issues, were prioritised.

Analytical framework

The synthesis proceeded through three iterative stages. First, key concepts were extracted from each theoretical tradition and organised thematically. Second, conceptual mapping identified convergences, tensions and complementarities across frameworks. Third, an integrative model was constructed that synthesises these perspectives while attending to empirical support and clinical applicability. Throughout this process, critical attention was given to epistemological assumptions, cultural contexts and potential limitations of each approach.

Quality considerations

While not employing systematic review quality assessment tools, this synthesis prioritised theoretical coherence, empirical grounding where available and clinical relevance. Limitations of the critical synthesis approach include potential selection bias towards confirmatory literature and the interpretive nature of conceptual integration. These limitations are acknowledged and reflexively examined throughout.

Literature review

Captari and Worthington highlighted how psycho-spiritual and spiritual resources and stories can foster resilience and meaning-making in PTSD

recovery.³ In terms of this, the literature review explored the interdisciplinary foundations that inform contemporary approaches to supporting veterans' wellbeing, drawing on psychology, pastoral care, trauma studies and spiritual formation. To ensure a comprehensive and credible evidence base, a structured search was conducted across major academic databases, including Scopus, PsycINFO, ATLA Religion and Google Scholar.

Search terms combined concepts such as veteran wellbeing, pastoral care, self-compassion, resilience, moral injury, myth, meaning, spiritual integration and trauma recovery. Peer-reviewed articles, seminal texts and recent empirical studies published between 2000 and 2025 were prioritised. This review synthesises these diverse strands of scholarship to identify the core psychological, spiritual, and relational mechanisms that can strengthen support for veterans navigating stress, transition and moral or existential injury.

The reflective search uncovered several perspectives, especially on long-known spiritual and mythic works, yet some of these have not necessarily been used in a veteran context previously. Given the paper's meaning-making and psycho-spiritual focus, these, set out below, are perhaps not surprising, even as their integration emerges as arguably innovative.

Recent research supports the clinical value of story, narrative and mythological approaches for veteran PTSD treatment. A comprehensive meta-analysis by Penix-Smith and Swift examining 181 studies with over 124 000 military participants, found that narrative-based therapeutic approaches demonstrated significantly lower dropout rates (16–20%) than traditional trauma-focused therapies (34–40%).⁸ This finding is particularly salient given that treatment retention represents a persistent challenge in veteran PTSD care.

Engagement with narrative modalities suggests that story-based frameworks may resonate more deeply with veterans' experiences, potentially because they honour the transformative and meaning-laden nature of combat trauma rather than positioning it solely as pathology requiring extinction. These concepts are intended to provide support for integrating mythological and narrative structures into clinical practice, as such approaches appear to enhance veterans' willingness to remain engaged in therapeutic processes. From this, several ideas and concepts emerged. Each is now explored in turn.

The search revealed several psychological and psycho-spiritual authors and researchers. Some are well known and others less so. Of note, mythologist

Joseph Campbell's hero's journey provides a narrative structure that examines and can even validate the transformative nature of combat trauma while offering hope for return and renewal.⁹ So too, Carl Jung's analytical psychology illuminates how trauma constellates archetypal content in the psyche, requiring integration rather than mere symptom reduction.¹⁰

Then, the positive psychologist Kristin Neff's self-compassion framework¹¹ and the trauma psychologist Dr Robert Wicks' resilience-focused approach to secondary traumatisation,¹² although far less known, emerged because they provide empirically supported interventions that complement these depth psychological perspectives.

The hero's journey: Campbell's mythological framework

Joseph Campbell's concept of the 'monomyth'¹, or hero's journey, describes a universal narrative pattern found across world mythologies in which the hero ventures from the ordinary world into a realm of supernatural wonder, faces decisive trials and returns transformed with gifts to benefit their community.⁹ The journey's structure, separation, initiation and return, maps remarkably onto the veteran's experience of deployment, combat exposure and homecoming. That said, while there appears to be at least some immediate relevance to veterans, it is noteworthy that Joseph Campbell did not speak of, nor use, military or combat examples in his work.

Campbell identified the hero's journey as expressing fundamental psychological truths about human transformation. The call to adventure represents the disruption of ordinary life, the threshold crossing symbolises entry into the unknown, and the road of trials tests the hero's capacities. Central to Campbell's framework is the concept of the return, in which the hero must integrate their transformed self back into ordinary society, often facing resistance or incomprehension from those who remained behind.

For veterans, combat deployment constitutes a literal threshold crossing into a radically different world governed by survival imperatives and exposure to death. The warrior archetype, which Campbell

explores extensively, carries both constructive and shadow dimensions that become activated through military experience. The challenge lies not merely in surviving the journey but in integrating its transformative impact and finding meaning in the ordeal.¹³

Contemporary applications of Campbell's framework to veteran experience suggest that narrative reconstruction through mythological lenses may facilitate meaning-making and identity integration. Briere and Scott note that trauma disrupts narrative coherence, and mythology provides pre-existing narrative structures that validate extraordinary experience while offering pathways towards resolution.¹⁴ Yet, critical perspectives have noted that Campbell's framework reflects particular cultural assumptions and may not universally apply across diverse veteran populations.¹⁵

The application of Campbell's hero's journey as a therapeutic framework has gained renewed attention in recent clinical literature. Horvat et al. describe using the hero's journey structure to facilitate script change and meaning reconstruction in mental health treatment, including trauma populations.¹⁶ This could be of value for veteran pastoral carers too, although it has not yet been examined in a chaplaincy context.

Horvat et al.'s approach positions the hero's journey not as a metaphor but as an active therapeutic tool for reorganising life narratives and supporting psychological transformation. This aligns with earlier theoretical work by Tick¹³ and extends it into contemporary practice, suggesting that archetypal narrative structures provide veterans with recognisable patterns for making sense of their deployment experiences, combat exposure and challenging reintegration. The convergence of meta-analytic evidence for narrative engagement alongside specific applications of mythological frameworks strengthens the rationale for systematic integration of these approaches into veteran PTSD treatment protocols.

Jungian analytical psychology and trauma

Carl Jung's analytical psychology offers profound insights into trauma's impact on the psyche. Jung understood the psyche as comprising the conscious ego, the personal unconscious and the collective unconscious populated by universal archetypes that are the primordial patterns of human experience.¹⁰ Trauma, from a Jungian perspective, constellates archetypal content that overwhelms ego consciousness, requiring a process of individuation that integrates these unconscious contents.

1 'Monomyth' is another name for the hero's journey. This is an universal story pattern found across cultures and eras. Joseph Campbell popularised the term in *The Hero with a Thousand Faces*, arguing that many myths follow a shared arc: a hero leaves the ordinary world, faces trials, undergoes transformation and returns changed.

The warrior archetype is particularly relevant to veteran psychology. Jung recognised the warrior as carrying both protective and destructive potentials, embodying courage, discipline and sacrifice while risking inflation, aggression and disconnection from feeling values.¹⁷ Combat trauma may activate the warrior archetype's shadow aspects, manifesting in hypervigilance, rage and moral injury when warriors witness or participate in acts that violate deeply held values.

Jung's concept of the shadow, which is those aspects of personality rejected from consciousness, illuminates PTSD symptoms as expressions of disowned experience demanding acknowledgment. Intrusive memories, flashbacks and nightmares represent the psyche's attempts to integrate overwhelming material. Rather than merely reducing symptoms, Jungian approaches emphasise confronting and integrating shadow content through techniques including active imagination, dream work and symbolic exploration.

Post-Jungian theorists have extended these concepts to trauma specifically. Kalsched describes how trauma creates a self-care system that simultaneously protects and imprisons the traumatised individual,¹⁸ a dynamic frequently observed in veterans who remain in hypervigilant defensive postures years after deployment. Knox integrates attachment theory with Jungian concepts, suggesting trauma affects both personal attachment patterns and archetypal imagery, requiring therapeutic attention to both levels.¹⁹

Empirical support for Jungian approaches to trauma remains limited but growing. Harris found that Jungian sandplay therapy reduced PTSD symptoms in combat veterans,²⁰ potentially through facilitating symbolic expression and integration. Schaverien describes art therapy with military personnel using Jungian principles, noting how visual symbolism allows veterans to express traumatic content that resists verbal articulation.²¹ However, randomised controlled trials specifically examining Jungian psychotherapy for PTSD are notably absent from the literature.

Robert Wicks: Resilience and secondary traumatisation

Dr Robert Wicks, a clinical trauma psychologist drawing heavily on Jungian and contemplative traditions, has extensively studied resilience among individuals exposed to secondary trauma, including military chaplains and healthcare providers. His framework emphasises self-care, compassionate

engagement and the cultivation of perspective as protective factors against traumatisation.^{12,22}

Wicks identifies the 'shadow side of caring' wherein helpers absorb others' trauma through empathic engagement without adequate self-protection (12, pp. 23–37). This concept extends to military units where shared traumatic exposure creates collective wounding. Wicks advocates for what he terms 'healthy detachment' that is, maintaining compassionate presence while preserving psychological boundaries, a capacity essential for sustained deployment functioning and post-deployment recovery.

Central to Wicks' approach is cultivating resilience through practices such as perspective-taking, self-awareness, humour and spiritual engagement. He emphasises recognising early warning signs of compassion fatigue and secondary traumatisation, particularly relevant for veterans transitioning from combat environments where such signs were necessarily ignored.²² His framework integrates Jungian concepts of shadow work with cognitive-behavioural and mindfulness-based techniques, creating a practical synthesis applicable to veteran populations.

Wicks collaborates extensively with military chaplains, recognising their unique role in supporting service members' moral and spiritual struggles. His work addresses moral injury, the psychological distress that arises from perpetrating, witnessing or failing to prevent actions that violate moral beliefs. This is a dimension of combat trauma increasingly recognised as distinct from fear-based PTSD.²³ Wicks' integration of psychological and spiritual frameworks provides language for addressing existential dimensions of combat trauma.

While Wicks' framework is widely applied in military contexts, empirical validation of its effects on veteran outcomes remains limited. His approach represents clinical wisdom synthesised from extensive consultation work rather than manualised treatment subjected to rigorous outcome studies. This limitation is acknowledged while recognising the value of experienced clinical perspectives in informing the development of integrative treatments.

Kristin Neff: Self-compassion and trauma recovery

Kristin Neff's research on self-compassion which is about treating oneself with kindness, recognising common humanity in suffering, and maintaining mindful awareness of difficult emotions, has emerged as highly relevant to trauma recovery.^{11,24}

Self-compassion comprises three interconnected components: self-kindness versus self-judgement, common humanity versus isolation and mindfulness versus over-identification with painful thoughts and emotions.

Veterans frequently struggle with intense self-criticism, guilt and shame related to combat experiences. Neff's framework directly addresses these difficulties by cultivating alternative responses to self-blame and moral injury. Self-compassion research demonstrates associations with reduced PTSD symptoms, depression and anxiety while predicting greater psychological resilience and wellbeing.²⁵

Critically for veteran populations, self-compassion predicts lower PTSD symptom severity even after controlling for negative life events and trait mindfulness.²⁶ Hiraoka et al. found that self-compassion mediated the relationship between combat exposure and PTSD symptoms in Iraq and Afghanistan veterans,²⁷ suggesting self-compassion may buffer against traumatic stress. These findings indicate that self-compassion is both a protective factor and a potential intervention target.

Neff and Germer developed Mindful Self-Compassion (MSC),²⁵ an eight-week training program demonstrating efficacy in increasing self-compassion and reducing depression, anxiety and stress. While MSC has not been specifically tested with veteran PTSD populations, adaptations incorporating military-relevant contexts show promise. The Veterans Affairs system has begun integrating self-compassion components into existing evidence-based treatments, recognising veterans' particular struggles with self-forgiveness and moral injury.²⁸

Self-compassion intersects meaningfully with Jungian psychology's emphasis on accepting shadow aspects rather than condemning oneself for them. Both frameworks advocate for compassionate witnessing of difficult psychological content rather than suppression or harsh self-judgement. This convergence suggests potential synergies between self-compassion practices and in-depth psychological exploration.

Positive psychology and post-traumatic growth

Positive psychology, pioneered by Seligman and Csikszentmihalyi, shifts the focus from pathology to human flourishing, examining strengths, virtues and conditions that enable individuals and communities to thrive.²⁹ Within trauma studies, this

orientation manifests in PTG research examining positive psychological changes following traumatic experiences.³⁰

PTG describes improvements in relationships, personal strength, appreciation for life, new possibilities and spiritual development emerging through struggling with trauma's aftermath. Tedeschi and Calhoun propose that PTG results from cognitive processing that rebuilds shattered assumptive worlds,³⁰ a process facilitated by social support, disclosure and meaning-making. Importantly, PTG does not preclude ongoing PTSD symptoms; both can coexist.

For veterans, PTG research demonstrates that combat trauma may catalyse profound growth alongside distress. Pietrzak et al. found that 72% of deployed veterans reported at least moderate PTG, with growth predicting better mental health outcomes.³¹ However, critical perspectives note measurement challenges and the risk of minimising suffering by emphasising growth narratives.³²

The intersection of PTG with mythological and Jungian frameworks is compelling. Campbell's hero returns transformed, bearing gifts for the community, paralleling PTG's emphasis on finding meaning and benefit in adversity. Jung's individuation process involves integrating previously unconscious material to achieve greater psychological wholeness, conceptually aligned with PTG's transformative potential. Both frameworks validate suffering as potentially generative rather than merely pathological.

Character strengths research within positive psychology identifies virtues, including courage, humanity, justice, temperance, transcendence and wisdom that may be cultivated to enhance resilience.³³ Many veterans demonstrate extraordinary courage, loyalty and self-sacrifice—strengths that may be reframed from military training as enduring personal capacities applicable to civilian life. Strengths-based approaches complement traditional symptom-focused treatments by building capacities alongside addressing deficits.

Identified convergences, tensions and complementarities across frameworks

The critical synthesis reveals significant convergences across mythological, Jungian and positive psychology frameworks that strengthen their potential integration for veteran PTSD care. All three traditions emphasise meaning-making as central to trauma recovery, positioning the

construction of coherent narratives that integrate traumatic experiences within broader life stories as foundational to healing.

Campbell's monomyth provides an archetypal narrative structure through the hero's journey motif, Jung's analytical psychology illuminates the symbolic and archetypal dimensions that require integration, and positive psychology's PTG research demonstrates empirically how meaning-making facilitates psychological transformation. Further, these frameworks converge in recognising trauma as potentially transformative rather than solely pathological: Campbell's hero returns changed, with gifts for the community; Jung's individuation process involves integrating previously unconscious content to achieve greater wholeness, and PTG acknowledges genuine growth emerging from struggle with trauma's aftermath.

Self-compassion and shadow integration represent another crucial convergence, as both Neff's framework and Jungian approaches advocate accepting rather than condemning difficult aspects of experience, providing veterans pathways to address profound guilt, shame and moral injury through compassionate witnessing rather than harsh self-judgement.

However, important tensions and complementarities also emerge, requiring careful consideration in implementation. A primary tension exists between the epistemological assumptions underlying depth psychology and the positivist empiricism that dominates contemporary trauma treatment research, creating paradigmatic challenges over what constitutes valid evidence and how outcomes should be measured.

Campbell's monomyth and Jung's archetypal theory have been criticised for claiming universality while potentially reflecting Western cultural assumptions, raising questions about their applicability across diverse veteran populations with varied cultural, ethnic and religious backgrounds. Gender considerations present additional complexity, as traditional warrior archetypes reflect masculine ideals that may not resonate with female veterans or may reinforce problematic hypermasculinity.

Despite these tensions, complementarities abound: positive psychology's empirical rigour complements depth psychology's theoretical richness; self-compassion practices provide concrete interventions that operationalise Jungian shadow acceptance; and narrative approaches bridge mythological frameworks with evidence-based treatments by enhancing engagement and reducing dropout rates.

The frameworks complement rather than compete, suggesting that integration requires not wholesale adoption but thoughtful synthesis that honours empirical evidence while addressing existential and meaning-making dimensions inadequately served by symptom-focused treatments alone.

Discussion

In light of the complex contemporary realities veterans face, the findings of the literature review are applied to present an emerging integration model that combines psychological, spiritual and social domains. While each of these domains addresses valid needs in isolation, an integrated, holistic care model more effectively addresses the layered experiences of trauma, identity disruption and reintegration.

By examining the convergences between Wicks' resilience-building strategies, Neff's self-compassion framework, Jung's insights into archetypes and the wounded psyche, and Campbell's narrative understanding of the hero's journey, this section proposes a unified approach that honours both the inner and outer dimensions of veteran recovery.

The discussion also considers practical implications for chaplains, clinicians, peer supporters and community organisations seeking to offer grounded, compassionate and sustainable care.

Several themes emerge across mythological, Jungian and positive psychology literatures with particular relevance to veteran PTSD care. First, in terms of meaning-making as central to recovery, all frameworks emphasise constructing coherent narratives that integrate traumatic experiences within broader life stories. Second, Campbell's monomyth provides an archetypal structure for this narrative, which includes the 'journey' motif. Then, Jungian psychology illuminates symbolic dimensions, and positive psychology examines how meaning-making facilitates growth. Finally, Wicks is useful in that he speaks of 'healthy detachment', which is maintaining compassionate presence and Neff's self-care framework encourages veterans to see their mistakes in terms of their shared humanity with others, self-compassion and mindfulness.

Transformation through adversity

Rather than positioning the goal as returning to pre-trauma functioning, these approaches recognise trauma as potentially transformative. The hero returns changed, individuation involves integrating previously unconscious content, and PTG acknowledges genuine growth through suffering.

Shadow integration and self-compassion

Jungian shadow work and self-compassion both advocate for accepting rather than condemning difficult aspects of experience. Veterans carry profound guilt, shame and moral injury requiring compassionate witnessing rather than harsh judgement.

The archetypal warrior and identity integration

Campbell and Jung both address warrior archetypes that carry both constructive and destructive potentials. Veterans must integrate warrior identities forged in combat with post-military civilian selves, a process that requires recognising both warrior gifts and wounds.

Community and common humanity

Campbell emphasises the hero's return to benefit the community, Neff highlights common humanity in suffering, and positive psychology examines social connection as fundamental to wellbeing. Veterans' isolation and disconnection from civilian society represent critical treatment targets.

In terms of critical synthesis an integration of mythological, Jungian, and positive psychology perspectives proffers an integrative framework positioning veteran PTSD treatment as facilitating a transformative journey through archetypal territory. This framework comprises five interconnected dimensions:

1. Recognising the hero's journey structure

Many veterans, knowingly or unknowingly, have undertaken some form of hero's journey. This includes the call to service, often requiring crossing thresholds into combat zones, facing mortal trials and returning home transformed in known and as yet unknown ways. However, many veterans become stuck in what Campbell terms 'the refusal of the return', unable to reintegrate their combat experiences and warrior identities into civilian life (9, pp. 179–192). Treatment facilitates completion of the hero's journey by validating the departure and trials while supporting the return phase.

Narrative therapy approaches using mythological frameworks may help veterans contextualise their experiences within archetypal patterns. Rather than viewing PTSD symptoms as pathological, they may be understood as expectable responses to incomplete integration of extraordinary experiences. This reframing reduces stigma while providing hope that return and reintegration remain possible.

2. Engaging the warrior archetype and its shadow

Combat activates the warrior archetype in its fullness, both the noble protector willing to sacrifice for others and the shadow warrior capable of destruction. Many veterans struggle with warrior shadow material: rage, aggression, moral injury from killing or guilt over survival when comrades died. Jungian approaches encourage confronting rather than repressing this shadow content through symbolic exploration, dream work and guided active imagination.

Wicks' concept of healthy detachment becomes relevant here, as veterans must recognise warrior capacities without remaining identified solely with warrior roles.

The task involves honouring the warrior's contributions while developing other archetypal potentials—the lover, the sage, the caregiver—that are suppressed during military service. This expansion of archetypal identity allows veterans to draw on warrior strengths when needed without remaining perpetually mobilised for combat.

3. Cultivating self-compassion for moral injury

Moral injury, which encompasses the psychological, social and spiritual impact of perpetrating, witnessing or failing to prevent actions violating deeply held moral beliefs, may be inadequately addressed by traditional PTSD treatments focused on fear conditioning.²³ Self-compassion directly targets the shame, guilt and self-condemnation characteristic of moral injury.

Neff's framework encourages veterans to recognise that all humans make mistakes in impossible situations and that suffering is part of the shared human experience. That self-kindness is possible even when acknowledging regret or guilt. This stance seems to parallel Jungian shadow acceptance: recognising one's capacity for darkness without being defined by it.

Integrating self-compassion practices with exploration of moral injury's archetypal dimensions (the wounded healer, the scapegoat, the sacrificial figure) may facilitate both psychological and spiritual healing.

4. Meaning-making and post-traumatic growth

All frameworks converge on meaning-making as central to trauma integration. From a Jungian perspective, traumatic experiences constellate

archetypal content demanding integration for individuation to proceed. Campbell's framework suggests that the hero's ordeals must be understood as purposeful trials yielding wisdom to share. Positive psychology's PTG research demonstrates that actively processing trauma to construct meaning predicts better outcomes.

Facilitating meaning-making may involve multiple approaches: narrative reconstruction using mythological structures, Jungian symbolic exploration through art or sandplay, written disclosure exercises and the examination of character strengths developed through military service. The goal is not to impose predetermined meanings but to support veterans' own discovery of significance in their experiences.

5. Return to community and sacred purpose

Campbell emphasises that the hero must return to benefit the community with hard-won wisdom. Many veterans struggle with purposelessness in civilian life, having experienced profound meaning through

the clarity of mission and intensity of bonds in military service. That is not to say that many others do not find purpose and care for others. Reintegration requires finding new forms of sacred purpose and meaningful contribution.

This dimension connects to Wicks' emphasis on perspective and purpose as resilience factors and positive psychology's research on meaning, engagement and contribution to wellbeing. Veterans may find renewed purpose through peer support, advocacy, mentoring younger veterans or applying military-developed skills to civilian service. Facilitating this return with gifts intact represents the treatment's ultimate aim. Overall, the five dimensions are as follows:

1. Recognising the hero's journey structure
2. Engaging the warrior archetype and its shadow
3. Cultivating self-compassion for moral injury
4. Meaning-making and post-traumatic growth
5. Return to community and sacred purpose

As a practical guide for practitioners and veteran supporters, Figure 1 below summarises the integrative psycho-spiritual framework, depicting the dynamic interplay among narrative, archetypal, moral, existential and communal processes that collectively support veterans' movement from trauma towards renewed purpose and belonging.



Taken together, these five dimensions form a coherent and deeply human framework for understanding and supporting veterans as they navigate the aftermath of trauma. Rather than reducing PTSD to a set of symptoms or isolating psychological, spiritual and relational needs into separate silos, this integrative model recognises the veteran's journey as a complex interplay of identity, meaning, moral struggle and community belonging.

As a practical guide for practitioners and veteran supporters, Figure 1 below summarises the integrative psycho-spiritual framework, depicting the dynamic interplay among narrative, archetypal, moral, existential and communal processes that collectively support veterans' movement from trauma towards renewed purpose and belonging.

Campbell's narrative arc provides a structure for understanding the veteran's path; Jung's archetypal psychology illuminates the inner terrain of shadow, warrior identity and individuation; Neff's self-compassion framework offers a pathway for healing shame and moral injury; and Wicks' emphasis on resilience, perspective, and purpose grounds the process in sustainable practices that support long-term wellbeing.

From all this, using the five dimensions, an integrative veteran support framework was constructed that synthesises these perspectives while attending to empirical support and clinical applicability. This is shown below in Table 1, which illustrates each dimension's core focus and potential contribution(s) to veteran care:

This synthesis reframes veteran recovery not as a return to a pre-trauma state but as a potentially transformative journey in which suffering, courage

and growth coexist. It highlights the importance of helping veterans integrate their warrior identity, make meaning of their experiences, cultivate compassion towards themselves and rediscover a sense of sacred purpose within the community. Ultimately, the framework suggests that healing occurs not only through clinical intervention but through restoring narrative coherence, reconnecting with humanity and reclaiming a place in the world. Such an approach offers chaplains, clinicians, peer supporters and communities a more holistic and hopeful way to walk alongside veterans as they move towards renewed identity, belonging and purpose.

Contributions and limitations

While each concept or framework brings theoretical richness, empirical validation of their integration for veteran PTSD treatment remains limited. Evidence-based treatments such as PE and CPT demonstrate superior efficacy in randomised controlled trials.³⁴ However, high dropout rates and persistent symptoms for many veterans suggest the need for complementary approaches.

Emerging evidence supports specific components of this integrative framework. Self-compassion's association with reduced PTSD severity,²⁷ PTG's prevalence among veterans,³¹ and preliminary support for arts-based therapies using symbolic expression²¹ collectively suggest promise. However, rigorous outcome studies specifically testing mythologically-informed, Jungian-oriented or integrated positive psychology approaches for veteran PTSD are notably absent.

It is noted that the paper is reflective in nature and, therefore, lacks empirical validation and limited cultural variability. There is also an epistemological

Table 1: Veteran support framework

Dimension	Core Focus	Key Contribution
Recognising the Hero's Journey Structure	Understanding the veteran's experience through archetypal narrative and personally-relevant stories	Provides a coherent story framework that validates a veteran's struggle, reduces stigma, and supports reintegration after trauma
Engaging the Warrior Archetype and Its Shadow	Exploring both the strengths and wounds of the warrior identity	Helps veterans integrate combatformed identities, confront shadow material, and expand into nonwarrior roles
Cultivating Self-Compassion for Moral Injury	Addressing shame, guilt, and selfcondemnation through compassionate awareness	Supports healing of moral injury by fostering acceptance, shared humanity, and emotional regulation
Meaning-Making and PostTraumatic Growth	Constructing significance and meaning from traumatic experiences	Facilitates psychological and spiritual integration, enabling growth rather than mere symptom reduction
Return to Community and Sacred Purpose	Reestablishing belonging, societal connections and contribution, and mission in civilian life	Restores purpose, strengthens social connection, and supports longterm wellbeing and identity renewal

tension between the symbolic, meaning-oriented foundations of depth psychology and mythology, and the positivist, symptom-focused empiricism that underpins contemporary evidence-based trauma treatments. This raises important questions, for future research, about what counts as valid knowledge and how healing is best understood and offered.

Methodological challenges include defining and measuring constructs such as archetypal integration, operationalising mythological interventions for replicability and distinguishing specific effects of meaning-making from general therapeutic factors. Additionally, the epistemological assumptions of depth psychology diverge from the positivist empiricism dominating contemporary trauma treatment research, creating paradigmatic tensions regarding what constitutes valid evidence.

Clinical issues

It is noted that the treatment regimes and applications suggested are already available in clinical or subclinical settings. Rather, this paper suggests a model to augment such interventions. It is also important to acknowledge that an exhaustive survey of all treatment protocols, both clinical and non-clinical, is not possible in this paper.

Further, it is important to consider whether randomised controlled trials (RCTs) represent a valid avenue for evaluating this integrative psycho-spiritual model. This depends on how one conceptualises both the intervention and the outcomes it seeks to influence. RCTs remain the gold standard for establishing efficacy within contemporary trauma treatment research, and established modalities such as PE and CPT have earned their status through rigorous RCT evidence. In this sense, pursuing RCTs would allow the proposed model to be evaluated within the same evidentiary framework, strengthening its credibility and facilitating integration into clinical pathways.

However, the manuscript also highlights that the model addresses domains including meaning-making, archetypal integration, moral repair and spiritual coherence, which are not easily reducible to symptom scores or short-term behavioural outcomes. This approach also notes the methodological challenges, including defining and measuring constructs such as archetypal integration, operationalising mythological interventions for replicability and distinguishing specific effects of meaning-making from general therapeutic factors. These challenges suggest that while RCTs may be possible, they risk oversimplifying or misrepresenting the model's

aims if used in isolation. Mixed-methods designs, longitudinal qualitative inquiry and pragmatic trials may therefore be more appropriate starting points, capturing the depth-oriented, narrative and existential changes the model seeks to foster.

Cultural and individual considerations

A critical examination reveals important limitations in universalising these frameworks. Campbell's monomyth has been criticised for reflecting Western, particularly Greco-Roman and Judeo-Christian, mythological patterns while claiming universality.¹⁵ Jung's concept of universal archetypes, while compelling, remains controversial and may underestimate cultural variability in symbolic systems.

Veterans come from diverse cultural, ethnic and religious backgrounds that shape how they understand military service, combat trauma and healing. Indigenous veterans may connect more deeply with tribal warrior traditions than Campbell's monomyth. Veterans from collectivist cultures may experience reintegration differently than the individualistic hero's journey suggests. Effective implementation requires cultural humility and adaptation of archetypal frameworks to honour diverse meaning-making systems.

Gender considerations are also critical. Traditional warrior archetypes reflect masculine ideals that may not resonate with female veterans or may reinforce problematic hypermasculinity. Women veterans, comprising increasing proportions of military populations, may experience military service and combat trauma through different archetypal lenses requiring attention to feminine heroic patterns and warrior traditions.

Clinical applications and future directions

Despite empirical limitations, this integrative framework suggests clinical applications worthy of further development and testing:

- *Narrative therapy using mythological structures:* therapists trained in both trauma treatment and mythological frameworks could help veterans map their experiences onto the structures of the heroic journey, potentially facilitating meaning-making and narrative coherence. This might complement existing evidence-based treatments rather than replacing them.
- *Jungian expressive therapies:* art therapy, sand play and dreamwork may provide veterans with alternative avenues for expressing traumatic material that resists verbal articulation.

Particularly for moral injury and complex trauma involving shame, symbolic modalities may circumvent defences blocking cognitive processing.

- *Self-compassion training adapted for veterans:* military culture often emphasises toughness and self-sufficiency, which can make self-compassion seem weak. Culturally adapted programs that frame self-compassion as warrior resilience, essential for sustained mission readiness, may increase acceptability while addressing shame and moral injury.
- *Strengths-based interventions that recognise military character development:* rather than focusing solely on deficits, treatment might systematically identify and amplify character strengths developed through military service, helping veterans recognise how courage, loyalty and perseverance serve them in civilian life.
- *Group therapy incorporating ritual and meaning-making:* warrior cultures historically employed rituals marking transitions from combat to peace. Contemporary group therapy might incorporate ritual elements, peer witnessing of stories and collective meaning-making that honour veterans' archetypal journeys while fostering community reintegration.

Future research could examine the outcomes of interventions integrating these frameworks, ideally through mixed-methods designs that capture both symptom reduction and meaning-making, growth and identity integration. Qualitative research examining veterans' own understandings of their experiences through mythological and archetypal lenses could inform the development of culturally resonant interventions.

Then, to address some of the limitations identified, particularly the lack of empirical validation, cultural variability and the epistemological tension between depth psychology and positivist research, the model could be positioned not as a replacement for PE or CP) but as a complementary, meaning-oriented adjunct.² This positioning allows clinicians to maintain the symptom-reduction strengths of established treatments while integrating narrative, archetypal and compassion-based elements that may enhance engagement and reduce dropout, consistent with

- 2 Cognitive processing therapy (CPT) is a trauma-focused cognitive therapy designed to address the ways traumatic events disrupt beliefs about oneself, others and the world. CPT is particularly effective for veterans whose trauma involves guilt, shame or moral conflict.

research affirming that narrative-based therapeutic approaches demonstrated significantly lower dropout rates.

Further, limitations related to cultural universality and gendered archetypes can be addressed through adaptive implementation rather than theoretical revision. This includes co-designing interventions with diverse veteran groups, incorporating culturally specific warrior traditions, and expanding beyond masculine-coded archetypes to include feminine, relational and communal hero narratives. Finally, the model's reliance on constructs such as shadow integration and sacred purpose can be operationalised through measurable proxies, such as the self-compassion scale, PTG indices, moral injury inventories and narrative coherence measures, allowing empirical evaluation without distorting the model's psycho-spiritual foundations.

The manuscript highlights the centrality of self-compassion in trauma recovery, noting that Neff's framework 'directly addresses the shame, guilt and moral injury characteristic of veteran experience'. This emphasis opens a rich avenue for further exploration of Eastern philosophical traditions that have long cultivated compassion, discipline and moral clarity within warrior cultures. In Buddhism, self-compassion is inseparable from the recognition of shared suffering (*dukkha*) and the cultivation of non-judgemental awareness. These principles closely align with the manuscript's integration of mindfulness, shadow acceptance and moral repair. Similarly, the Bushidō code of the Japanese samurai emphasises honour, courage, benevolence and self-restraint, offering a culturally distinct but resonant framework for understanding the moral and existential dimensions of warrior identity.

Other Eastern traditions, such as Taoist balance, Confucian relational ethics or the yogic integration of body-mind-spirit, could also enrich the model by providing alternative pathways for meaning-making, emotional regulation and identity reconstruction. Incorporating these perspectives would not only deepen the model's intercultural relevance but also expand its capacity to address the 'soul wounds' veterans describe in the manuscript.

Summary and conclusion

This critical synthesis integrates diverse theoretical perspectives and empirical findings across mythological, depth psychological and positive psychology literatures to address the complex, multidimensional nature of veteran PTSD care.

Joseph Campbell's hero's journey provides a universal narrative structure that validates the transformative nature of combat trauma while offering archetypal patterns for understanding deployment, trials and the challenging return to civilian life, supported by recent meta-analytic evidence demonstrating that narrative-based therapeutic approaches achieve significantly lower dropout rates (16–20%) compared to traditional trauma-focused therapies (34–40%).⁸

Carl Jung's analytical psychology illuminates how trauma constellates archetypal content in the psyche, particularly activating the warrior archetype's shadow dimensions, requiring integration through symbolic exploration, dreamwork and active imagination rather than mere symptom reduction, with preliminary empirical support from studies showing reduced PTSD symptoms through Jungian sand play therapy and art-based interventions.^{20,21}

Kristin Neff's self-compassion framework contributes robust empirical evidence that self-compassion predicts lower PTSD severity and mediates the relationship between combat exposure and PTSD symptoms in Iraq and Afghanistan veterans,²⁷ directly addressing the shame, guilt and moral injury inadequately served by fear-based treatments. Robert Wicks' resilience-oriented approach, drawing on Jungian and contemplative traditions, provides practical wisdom for cultivating healthy detachment, perspective and meaning amid secondary traumatisation, particularly relevant for military chaplains and veterans navigating moral and existential wounds.^{12,22}

Finally, positive psychology's PTG research demonstrates that 72% of deployed veterans report at least moderate growth, with meaning-making predicting better mental health outcomes,³¹ validating suffering as potentially generative and aligning conceptually with both Campbell's transformed hero returning with gifts and Jung's individuation towards psychological wholeness. Together, these integrated perspectives suggest that effective veteran PTSD care must extend beyond symptom management to facilitate a transformative journey encompassing narrative reconstruction, archetypal integration, compassionate self-relation, resilience cultivation and meaning-making that honours veterans' psychological, spiritual and relational realities while promoting PTG and renewed purpose.

The integration of mythological frameworks, Jungian analytical psychology and positive psychology, for veterans, while still embryonic, offers veterans and clinicians conceptual resources for understanding combat trauma as a transformative journey rather than merely a disorder requiring symptom management.

Joseph Campbell's hero's journey validates the extraordinary nature of military service while offering hope for a meaningful return. Carl Jung's analytical psychology illuminates how trauma constellates archetypal content requiring integration for psychological wholeness. Robert Wicks provides practical wisdom for encouraging detachment, sustaining resilience and meaning amid trauma exposure. Kristin Neff's self-compassion research offers practices to address shame and moral injury. Together, these perspectives suggest treatment approaches honouring veterans' experiences while promoting PTG.

While validation of this new, integrative framework remains incomplete, its theoretical coherence and preliminary supporting evidence justify further development and rigorous testing. The high prevalence of PTSD among veterans, combined with significant dropout rates from existing evidence-based treatments, demands innovation in therapeutic approaches. By recognising veterans as heroes whose journeys remain incomplete rather than patients whose symptoms need to be eliminated, this framework may offer more resonant and ultimately more effective pathways towards healing and reintegration.

The warrior's journey, Campbell reminds us, is never only personal but holds significance for the entire community. Supporting veterans in completing their heroic journeys and returning with wisdom intact represents not only a clinical imperative but also a sacred duty to those who have ventured into darkness on society's behalf.

Corresponding Author: Professor Peter Devenish-Meares, devenip@hotmail.com

Authors: P Devenish-Meares¹

Author Affiliations:

1 University of Southern QLD

References

1. Fulton JJ, Calhoun PS, Wagner HR, Schry AR, Hair LP, Feeling N, et al. The prevalence of posttraumatic stress disorder in Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF) veterans: A meta-analysis. *J Anxiety Disord.* 2015;31:98-107.
2. Steenkamp MM, Litz BT, Hoge CW, Marmar CR. Psychotherapy for military-related PTSD: A review of randomized clinical trials. *JAMA.* 2015;314(5):489-500.
3. Captari LE, Worthington EL. Spiritual narratives and meaning-making in trauma recovery: Implications for veterans with moral injury. *J Psychol Theol.* 2024;52(1):15-29.
4. Nieuwsma JA, Walser RD, Nash WP. Spiritually integrated care for military veterans: Addressing moral and existential suffering. *Psychol Serv.* 2023;20(3):147-59.
5. Smith-MacDonald L, Norris JM, Wild TC. Spiritual resilience and posttraumatic growth among military veterans: A mixed-methods exploration. *Mil Behav Health.* 2023;11(2):125-38.
6. Rousseau N, McColl E, Newton J, Grimshaw J, Eccles M. Practice based, longitudinal, qualitative interview study of computerized evidence based guidelines in primary care. *BMJ.* 2008;326(7384):314-8.
7. Dixon-Woods M, Agarwal S, Jones D, Young B, Sutton A. Synthesising qualitative and quantitative evidence: A review of possible methods. *J Health Serv Res Policy.* 2005;10(1):45-53.
8. Penix-Smith EA, Swift JK. The protocol matters: A meta-analysis of psychotherapy dropout from specific PTSD treatment approaches in U.S. service members and veterans. *Psychol Trauma.* 2025. Advance online publication.
9. Campbell J. *The hero with a thousand faces.* 3rd ed. New World Library; 2008. (Original work published 1949).
10. Jung CG. *The archetypes and the collective unconscious.* 2nd ed. Hull RFC, translator. Princeton University Press; 1969. (Original work published 1959).
11. Neff KD. Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self Identity.* 2003;2(2):85-101.
12. Wicks RJ. *Overcoming secondary stress in medical and nursing practice: A guide to professional resilience and personal well-being.* Oxford University Press; 2006.
13. Tick E. *War and the soul: Healing our nation's veterans from post-traumatic stress disorder.* Quest Books; 2005.
14. Briere J, Scott C. *Principles of trauma therapy: A guide to symptoms, evaluation, and treatment.* 2nd ed. Sage Publications; 2015.
15. Rushing JH, Frentz TS. *Projecting the shadow: The cyborg hero in American film.* University of Chicago Press; 1995.
16. Horvat NH, Čobanov MF, Milivojević Z, Jakovljević M. Psychopharmacotherapy and the Hero's Journey: Mental health medicines and script change. *Psychiatr Danub.* 2021;33(Suppl. 4):1140-3.
17. Jung CG. *Civilization in transition.* 2nd ed. Hull RFC, translator. Princeton University Press; 1970. (Original work published 1964).
18. Kalsched D. *The inner world of trauma: Archetypal defenses of the personal spirit.* Routledge; 1996.
19. Knox J. *Archetype, attachment, analysis: Jungian psychology and the emergent mind.* Brunner-Routledge; 2003.
20. Harris DA. The paradox of expressing speechless terror: Ritual liminality in the creative arts therapies' treatment of posttraumatic distress. *Arts Psychother.* 2009;36(2):94-104.
21. Schaverien J. *Boarding school syndrome: The psychological trauma of the 'privileged' child.* Routledge; 2015.
22. Wicks RJ. *Bounce: Living the resilient life.* Oxford University Press; 2010.
23. Litz BT, Stein N, Delaney E, Lebowitz L, Nash WP, Silva C, et al. Moral injury and moral repair in war veterans: A preliminary model and intervention strategy. *Clin Psychol Rev.* 2009;29(8):695-706.
24. Neff KD. The development and validation of a scale to measure self-compassion. *Self Identity.* 2003;2(3):223-50.

25. Neff KD, Germer CK. A pilot study and randomized controlled trial of the mindful self-compassion program. *J Clin Psychol*. 2013;69(1):28-44.
26. Thompson BL, Waltz J. Self-compassion and PTSD symptom severity. *J Trauma Stress*. 2008;21(6):556-8.
27. Hiraoka R, Meyer EC, Kimbrel NA, DeBeer BB, Gulliver SB, Morissette SB. Self-compassion as a prospective predictor of PTSD symptom severity among trauma-exposed U.S. Iraq and Afghanistan war veterans. *J Trauma Stress*. 2015;28(2):127-33.
28. Kearney DJ, Malte CA, McManus C, Martinez ME, Felleman B, Simpson TL. Loving-kindness meditation for posttraumatic stress disorder: A pilot study. *J Trauma Stress*. 2013;26(4):426-34.
29. Seligman MEP, Csikszentmihalyi M. Positive psychology: An introduction. *Am Psychol*. 2000;55(1):5-14.
30. Tedeschi RG, Calhoun LG. Posttraumatic growth: Conceptual foundations and empirical evidence. *Psychol Inq*. 2004;15(1):1-18.
31. Pietrzak RH, Goldstein MB, Malley JC, Rivers AJ, Johnson DC, Southwick SM. Risk and protective factors associated with suicidal ideation in veterans of Operations Enduring Freedom and Iraqi Freedom. *J Affect Disord*. 2010;123(1-3):102-7.
32. Wortman CB. Posttraumatic growth: Progress and problems. *Psychol Inq*. 2004;15(1):81-90.
33. Peterson C, Seligman MEP. Character strengths and virtues: A handbook and classification. Oxford University Press; 2004.
34. Watts BV, Schnurr PP, Mayo L, Young-Xu Y, Weeks WB, Friedman MJ. Meta-analysis of the efficacy of treatments for posttraumatic stress disorder. *J Clin Psychiatry*. 2013;74(6):e541-e550.



United States Service Members' Resilience and Social Support Resources at Post-Deployment

S V Bowles, D Hoffman, F M Cozzi, S Bujtor, E Grieser, S Kilar, A P Siddall, A Ghosh, J E M Novosel-Lingat, T Hoyt

Abstract

Introduction: Military service members encounter numerous stressors post-deployment. Unit cohesion, community, social connections and leadership can serve as resilience support systems and may help improve service members' wellbeing. This research examines the perceived value of these support systems for service members post-deployment.

Methods: A cross-sectional convenience sample of 78 United States military officers ($n=54$) and enlisted personnel ($n=24$) who had deployed to Iraq and/or Afghanistan completed post-deployment assessments. They were administered the Deployment Risk Resiliency Index, the Social Support Questionnaire and the Work-Life Well-Being Inventory.

Results: Unit support at post-deployment predicted positive wellbeing. The nuclear family was the primary support system for service members, with extended family providing additional support post-deployment. Spouses were the most preferred support person, followed by parents, friends, siblings and children. Service members reported that effective leaders supported their individual wellbeing through communication, while ineffective leaders overworked personnel, thereby negatively affecting their personal wellbeing. Family wellbeing was supported by leaders who granted time off, whereas ineffective leaders were described as demanding, negatively affecting family wellbeing. **Conclusions:** The unit and leaders can contribute to these service members' wellbeing. The nuclear family, extended family and friends are support systems identified by this sample, which largely consist of senior officers.

Keywords: family, post-deployment, service member, social support, wellbeing

Key messages

- **What is already known on this topic:** Service members face significant stressors post-deployment, and social support plays a crucial role in their wellbeing.
- **What this study adds:** This study identifies unit support and leader behaviour as important sources of post-deployment emotional wellbeing in a sample that largely consists of senior officers. The nuclear family (e.g., spouse and children) was identified as the most significant source of support in this preliminary research. Others recognised as important in the service member's support system were parents, friends and siblings in this predominantly senior officer population.
- **How this study might affect research, practice or policy:** Findings emphasise the need for further research on support systems, leadership training, structured family support programs and policies that strengthen unit cohesion to

enhance service members' post-deployment adjustment. Future research should develop and/or refine the measures for the Military Family Fitness Model's demands, resources and outcomes for service members' wellbeing. Specific to this paper, the external resources are unit support, community and social support and leadership influences.

Resilience is described as positive adaptation to adversity and is a psychological phenomenon, along with wellbeing, that consists of hedonic and/or eudemonic components and is used to train military personnel.¹ The United States (US) military has invested in resilience and wellbeing resources for service members prior to and post-deployment.¹ Extensive combat exposure may result in the need for service members to seek supports to address negative health impacts, specifically clinical treatment for conditions that may affect deployability (e.g., posttraumatic stress symptoms, depression and suicidal ideation).^{2,3} However, external support

resources that are easily accessible to the individual service member—such as the nuclear (e.g., spouse, children) and extended family (e.g., parents, siblings)—may serve as an early non-clinical intervention to mitigate the possible stress related to military deployments.⁴ Conceptual frameworks, such as the Military Family Fitness Model, can be used to understand how service member resilience is developed, which external resources influence service member wellbeing, and what outcomes are associated with resilience and wellbeing after successful military deployments.

The Military Family Fitness Model

The Military Family Fitness Model (MFFM) is a conceptual framework that captures the complex processes involved with service member resilience. Based on the theoretical underpinnings of demands and resources, individual, family and external resources mitigate demands and influence outcomes. Specifically, the MFFM posits that external resources (i.e., unit support, community resources, social support, and leadership influences) foster resilience in service members and their families. This demand resource model provides a comprehensive theoretical basis for identifying external resources that may mitigate deployment stressors for service members and their families.^{4,5} The MFFM captures mechanisms at work that contribute to service member resilience and readiness, fostering adaptive

outcomes (e.g., holistic health, positive relationships) and preventing or mitigating maladaptive outcomes (e.g., dissatisfaction, conflict, abuse). Adaptive outcomes, such as wellbeing and functioning, demonstrate service members' resilience and readiness for deployment. In contrast, family fitness maladaptive outcomes (e.g., conflict, increased use of health care) are considered vulnerabilities during and post-deployment. Figure 1 provides an overview of the integrated relationship between demand, resources and outcomes.

MFFM external resources

The MFFM was developed as an integrated model of resilience building for both service members and military families. Based on a US military program, Total Force Fitness,⁴ the processes in the MFFM function on the key assumption that resilience can be learned, specifically in response to adverse or traumatic situations. Although the MFFM recognises the daily struggles unique to service members and their families, the MFFM can be particularly useful throughout the deployment cycle. Specifically, demands during and post-deployment on service members and their families require access to any and all sources of resilience. In contrast, opportunities to proactively strengthen resilience and fitness prior to deployment are greatest during and after deployment since service members are at their most vulnerable to psychological and physical threats that may result in deployment-related trauma. As conceptualised in the

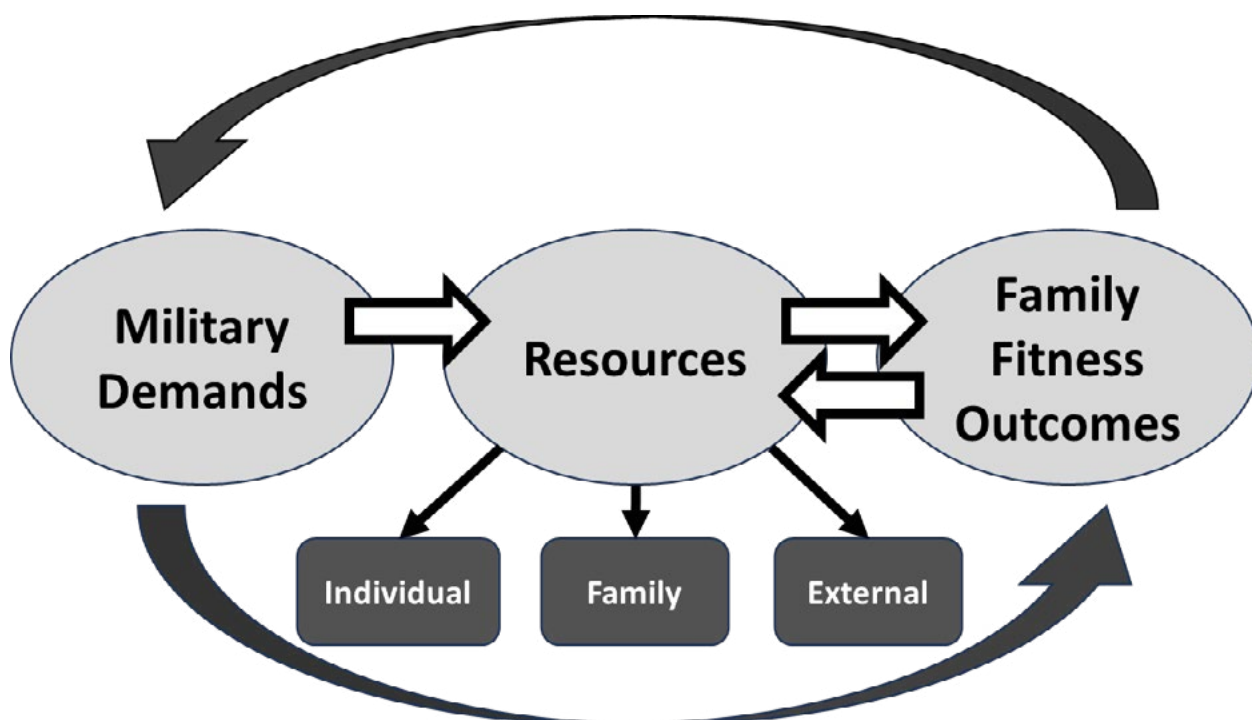


Figure 1. Military Family Fitness Diagram

MFFM, external resources may mitigate and alleviate these adverse experiences. These external resources that may support service members' resilience include unit support, community resources, social supports (e.g., family members) and leadership influences.

Unit support

Unit support and cohesion during deployment and post-deployment can protect against negative psychological impacts such as depression or suicidal ideation.³ Cohesive units exhibit more self-reported resilience and reduced mental health stigma, resulting in service members who identify and seek help for their needs more effectively.^{6,7} However, the protective effects of unit cohesion against negative psychological impacts can vary in efficacy depending on the unit cohesion dynamic. High levels of horizontal (peer-to-peer) cohesion significantly protect against post-traumatic stress symptoms (PTSS), depressive symptoms, and suicidal ideation and these effects are strongest for post-deployment depression.⁸ Unit-level vertical cohesion (i.e., leader to subordinate) is not as effective in mitigating the psychological effects of combat exposure, suggesting that buffering effects involving vertical cohesion may depend on the type of unit or leader.⁸ Past research found that greater levels of perceived unit cohesion were related to a decrease in behavioural health symptoms, therefore serving as a buffer to stress in the military environment.^{9,10}

Community resources

Military OneSource can offer service members community resources to help mitigate challenges associated with returning home.¹¹ For example, community programs, such as peer support groups,¹² offer important non-clinical services that service members might find more accessible, as they may avoid traditional mental health resources due to stigma.⁷ These groups can offer purpose development, meaning making and normalisation of struggles.¹³ Nature-based recreation therapy is effective in strengthening interpersonal skills.¹⁴ Additionally, membership and engagement with a Veterans Service Organization (VSO) is linked to reduced social isolation and greater perceptions of benefits by veterans post-deployment, both of which are associated with lower levels of post-traumatic stress symptomatology and improved health.¹⁵

Social support network

Social connections improve service members' ability to cope with military demands, enhance overall wellbeing and build an identity outside the

military, thereby increasing their satisfaction with life.¹⁶ Support originating from the family and non-military friends improves dyadic functioning, and this improvement in the relationship is associated with decreased psychiatric symptoms (e.g., PTSS, depressive symptoms, and anxiety) and has a significant effect on PTSS even after accounting for prior stressors.^{2,5} The presence of social support from family, peers and the community is also associated with increased global psychosocial functioning and resilience.⁶ Moreover, service members' perception of social support has been found to influence the effects of post-deployment PTSD symptoms.¹⁷

Leaders influences

Service members' ability to garner support from their families can be impacted by their leaders and work circumstances, which can impact overall wellbeing.¹⁸ Supportive leadership may enhance service members' wellbeing; for instance, sharing the training calendar to provide for planning ahead for family events months in advance.¹⁹ Leaders who engage in family-supportive supervisor behaviours such as providing emotional support, role-modelling and creating work-family management support, help subordinates balance stressors and reduce work-to-family spillover.²⁰ These types of supervisors also have a positive impact on emotional wellbeing and stress reactivity.²¹ Support from work supervisors is negatively associated with psychological distress.²²

Current study aims

This research examines external resources that support service members' resilience during and post-deployment. The current study extends the conceptual framework of the MFFM. The study's research aims to measure RQ1 unit support, RQ2 community resources and RQ3 social support for service members who have deployed. An additional aim for the research team was to qualitatively describe the effectiveness of RQ4 leadership influences perceived as an additional external resource for post-deployment wellbeing. Specifically, this research sought to address the following research questions (RQ):

- RQ1: How does unit support function as a source of resilience for service members during and post deployment?
- RQ2: How does community support function as a source of resilience for service members returning from deployment?
- RQ3: How do service members rank nuclear and extended family members as social support resources associated with resilience?

- **RQ4:** How do service members describe the influences of their leaders on their wellbeing and the wellbeing of their family?

The current study focused on a small population that overrepresented—but was not exclusive to—highly educated, male, white senior officers. While this is a limitation, it also provides a unique insight into the demands of the deployment cycle on those service members and their families, the resources required to meet these demands and the outcomes that may be expected due to the challenges and adversities experienced during and post-deployment.

Method

Participants

After obtaining institutional review board approval, recruitment for this study occurred at two installations in the eastern US. To be eligible for the study, service members had to be married and have been deployed within the last five years to combat zones (Operation Iraqi Freedom [OIF] conflict in Afghanistan from 2001–2013 and/or Operation Enduring Freedom [OEF] conflict in Iraq from 2003–2011). Seventy-eight service members from the US Army ($n = 34$), Air Force ($n = 14$), Navy ($n = 11$) and Marine Corps ($n = 16$) participated in this cross-sectional study from 2011–2013. Surveys were completed in person at the aforementioned installations in east-coast regions of the US. The majority of the sample identified as Caucasian (82.1%), with 27.9% selecting a minority race/ethnicity (from options including Black, Indian, Caucasian, Alaskan, African immigrant, Asian, West Indian, Pacific Islander, Don't know and Other). Of the participants, 87.2% identified as male ($n = 68$) and 69.2% of those were officers ($n = 54$). Over half of the sample (62.8%, $n = 49$) had completed college. The average age of the sample was 39.75 years ($SD = 7.83$), reflecting a predominantly senior officer demographic (O5–O6) with greater educational attainment.

Compared to participants in the current study, 30.4% of the US military comprises service members who have identified with a minority race/ethnicity (including Black or African American, Asian, American Indian or Alaska Native, Native Hawaiian or other Pacific Islander, Multiracial or Unknown). The slight underrepresentation of racial and ethnic minorities in this sample is also reflected in a slight underrepresentation of female service members, who make up 19.3% of the US military. The underrepresentation of enlisted personnel is more significant, reported at 81.8% as of 2023.²³

Although these differences in participant composition and sample representation may limit the generalisability of the results to service members from minority groups or to younger, predominantly enlisted populations, they contextualise the findings within a more experienced segment of service members. However, this oversampling of military officership and experience provides a novel perspective on external resources for resilience building during and post-deployment.

Measures

Currently, no single instrument is available to measure the MFFM. The research team selected the following measures, which have demonstrated construct and measurement validity to investigate each research question.

Deployment Risk and Resilience Inventory

The Deployment Risk and Resilience Inventory (DRRI; $\alpha = 0.94$) is a broad measure of risk and resilience factors related to military deployment.²⁴ A subscale was adapted to include post-postdeployment measurement

Unit support during deployment

Section F of the DRRI consists of 12 items ($\alpha = 0.88$) that measure unit camaraderie, leadership and a sense of belonging within the military community to assess perceived support during deployment. Participants selected their level of agreement with statements such as, 'While deployed, I felt a sense of camaraderie between myself and other soldiers in my unit'.

Unit support post-deployment

This 12-item measure is a modified version of the DRRI Section F, modified to assess unit support post-deployment. Items ($\alpha = 0.92$) mirror the DRRI Section F for the post-deployment time frame, that is, 'After deployment, I felt a sense of camaraderie between myself and other soldiers in my unit'.

Post deployment social support

Section L of the DRRI consists of 15 items ($\alpha = 0.83$) that assess the social support service members receive from friends, family, work associates (i.e., supervisors, peers) and the general public post-deployment. Section L also includes items that reference community support. Participants select their level to which they agree with statements such as, 'The American people made me feel at home when I returned'.

Social Support Questionnaire

The Social Support Questionnaire (SSQ) examines six dimensions of social support.²⁵ Participants selected responses that capture their perceived support in these areas (e.g., when tense, when feeling down, etc.). Respondents were asked to rank (1–9) who they received the most support from, with 1 being the person who provided the most support. The scoring procedure averaged frequency across the six domains of social support. Since the SSQ ranking is ordinal, calculating Cronbach's alpha to establish reliability was not necessary.

Work-Life Well-Being Inventory

The Emotional Well-Being (EWB) subscale of the Work-Life Well-Being Inventory (WLWBI) comprises five items ($\alpha = 0.71$) that assess emotional wellbeing (e.g., optimism, happy with life).²⁶ Leadership influence was examined through four open-ended questions (Appendix A) that asked participants to share three effective and three ineffective actions of their leaders to support individual and family wellbeing and to rank their responses by order of importance.

Data analysis

This exploratory measurement of the MFFM required both parametric and nonparametric analyses due to the small sample size and the combination of quantitative and qualitative responses.

Unit support and community resources

Regression models were fit to answer the first two research questions, with emotional wellbeing configured as the dependent variable, measured by responses to the EWB-WLWBI. For research question one, responses to DRRI Section F regarding unit support during and post-deployment were analysed to compare means. To answer research question two, responses to the DRRI Section L regarding community resources were configured as the predictor variable for service member wellbeing, again measured by the EWB-WLWBI.

Social support

To answer research question three, quantitative and qualitative data from each of the six SSQ subscales were collected to identify sources of social support associated with service member resilience. To examine support person categories across the subscales, the counts and ranking positions of the endorsed support categories were totalled, regardless of ranking position. The total for each subscale was then added together to create a total frequency and

score. Qualitatively, the responses were condensed into similar categories. Responses were nuclear family, extended family or non-family members to identify the highest-ranked support person for each subscale. 'Nuclear family' included spouses, children and pets, while 'extended family' included siblings, grandparents, aunts and uncles and stepfamily members. The highest-ranked self-reported support persons were extracted to complete this analysis. Additionally, the frequency of each individual within each family and non-family category was analysed using Wilcoxon Signed-Rank tests (Tables 2 and 3). The percentages of endorsements and ranks were produced to examine distributional differences. Since the data is ordinal, they do not satisfy the assumptions of ordinary least squares regression. Instead, nonparametric tests were used. Specifically, the frequency of each individual within each family and non-family support category was analysed using the Wilcoxon Signed-Rank tests. All reported statistical significance was set at $\alpha = .05$. Recommended thresholds were followed for small ($R^2 = .01$), medium ($R^2 = 0.09$), and large ($R^2 = 0.25$) effect sizes.²⁷

Leadership influence

Data on external support from leaders were collected to answer research question four by identifying leadership influences on service members' individual wellbeing, as well as their families' wellbeing. The responses were ranked by their *effectiveness* or *ineffectiveness* in influencing wellbeing. Responses on leadership influences on individual and family wellbeing were thematically analysed by two independent raters, who separately agreed on the final categorisation. Ranking was used to generate numerical scores in accordance with established survey research practices.²⁸

To analyse participant ranking data, a linear weighting approach was implemented, similar to rank-sum approaches and Borda Counts used to represent relative importance, as established in decision-making research. The percentage weighting procedure used in this study emphasised the proportional importance of each major ranking category.²⁹ Responses were weighted according to rank position (1st = 3 points, 2nd = 2 points, 3rd = 1 point). Weights were not changed if a participant only gave one or two responses instead of all three.

Multiple participants frequently listed similar responses (e.g., 'communication' analogous to 'check-ins'), so the number of points assigned to a given category was totalled. The total number of points ('Score') for a thematic category was then divided by

Table 1. Regressions predicting emotional wellbeing

HO	Variable entered	M	SD	B	β	R ²	F	DF	Sig
1	DRRI- During deployment unit support	28.22	8.11	0.049	0.107	0.011	0.823	(1,71)	0.367
2	DRRI- Post-deployment unit support	44.18	11.79	0.091	0.276	0.076	5.667	(1,69)	0.020*
3	DRRI- Post-deployment social support	60.29	10.50	0.060	0.147	0.022	1.563	(1,71)	0.215

Notes. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 2. Wilcoxon Signed-Rank Tests for highest-ranked support person for service members

SSQ Subscale	Z	M (c, d)	a > b	p
Nuclear vs extended/non-family				
Dependable help (SSQ1)	5.41	9, 8	67 > 8	< 0.001***
Really count on (SSQ2)	5.14	9, 8	65 > 11	< 0.001***
Total acceptance (SSQ3)	5.11	9, 8	67 > 8	< 0.001***
Really cares (SSQ4)	6.36	9, 8	71 > 5	< 0.001***
When in dumps (SSQ5)	5.60	9, 8	67 > 9	< 0.001***
When upset (SSQ6)	6.42	9, 8	70 > 6	< 0.001***
Nuclear/extended vs non-family				
Dependable help (SSQ1)	7.23	9, 6	74 > 1	< 0.001***
Really count on (SSQ2)	6.32	9, 5	69 > 7	< 0.001***
Total acceptance (SSQ3)	7.24	9, 1	72 > 3	< 0.001***
Really cares (SSQ4)	7.65	9, 2	75 > 1	< 0.001***
When in dumps (SSQ5)	6.73	9, 0.5	69 > 7	< 0.001***
When upset (SSQ6)	7.30	9, 0	73 > 3	< 0.001***

Notes. *** $p < 0.001$

^a Negative ranks

^b Positive ranks

^c Nuclear family median or nuclear/extended family median

^d Extended/non-family median or non-family member (other) median

Table 3. Wilcoxon Signed-Rank Tests for number of support persons for service members

SSQ Subscale	Z	M (c, d)	a > b	p
Nuclear vs extended/non-family				
Dependable help (SSQ1)	7.10	1, 5	3 < 65	< 0.001***
Really count on (SSQ2)	3.79	1, 2	25 < 43	< 0.001***
Total acceptance (SSQ3)	6.09	1, 4	10 < 56	< 0.001***
Really cares (SSQ4)	6.15	1, 4	12 < 57	< 0.001***
When in dumps (SSQ5)	2.54	1, 2	29 < 33	0.011*
When upset (SSQ6)	2.68	1, 2	28 < 36	0.007**
Nuclear/extended vs non-family				
Dependable help (SSQ1)	5.34	4, 1	53 > 12	< 0.001***
Really count on (SSQ2)	4.75	2, 1	55 > 11	< 0.001***
Total acceptance (SSQ3)	6.36	4, 1	60 > 10	< 0.001***
Really cares (SSQ4)	7.04	4, 1	68 > 7	< 0.001***
When in dumps (SSQ5)	5.72	2.5, 0.5	61 > 8	< 0.001***
When upset (SSQ6)	5.85	2, 0	63 > 9	< 0.001***

Notes. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, † trend at $p < 0.10$

^a Negative ranks

^b Positive ranks

^c Nuclear family median or nuclear/extended family median

^d Extended/non-family median or non-family member (other) median

the total number of points across all responses to the question and multiplied by 100 to yield a weighted percentage of total points allotted to that category in response to the question ('Score %').

Results

RQ 1 and 2: Unit support and community resources

Unit support for the service members during deployment did not significantly predict emotional wellbeing, $F(1, 71) = 0.82$, $R^2 = 0.01$, $p = 0.367$, (95% CI -0.059 to 0.158), demonstrating a small effect size (Table 1). In contrast, unit support for service members post-deployment significantly predicted emotional wellbeing, $F(1, 69) = 5.67$, $R^2 = 0.08$, $p = 0.020$, (95% CI 0.015–0.167). Unit support was positively related to emotional wellbeing, such that every one-unit increase in reported unit support predicted an increase of 0.09 in the EWB-WLWBI score. Community support for service members at post-deployment did not significantly predict emotional wellbeing, $F(1, 71) = 1.56$, $R^2 = 0.02$, $p = 0.215$, (95% CI -0.036 to 0.156).

RQ 3: Family as social support resources

Service members listed spouses, mothers, fathers, children, brothers, sisters and friends as primary sources of social support. There was a significant difference in both the ranking and the frequency of

the nuclear family compared with other social support persons ($p < 0.001$ for all SSQ subscales; Tables 2 and 3). There was also a significant difference in both frequency and ranking when comparing the nuclear and extended family against non-family members ($p < 0.001$ for all SSQ subscales; Tables 2 and 3). The nuclear and extended family together were identified more often as primary sources of support than all non-familial support sources combined. Service members ranked spouses and friends highest among support personnel across SSQ subscales (Table 4).

RQ 4: Leadership influence

Results demonstrated communication/check-ins, time off/family time, empowerment/encouragement, support, and providing information/resources as the highest-ranked effective leadership actions for the individual service members' wellbeing (Table 5). Service members identified demanding behaviour, overwork, poor behaviour, lack of communication/check-ins and a lack of compassion as ineffective leadership actions for individual wellbeing. For family wellbeing, service members reported that effective actions by leaders included granting time off/family time, general support (e.g., moral and verbal), communication/check-ins, providing information/resources and household help. Ineffective actions by leadership related to family wellbeing included being overly demanding and/or overworking personnel (Table 5).

Table 4. Overall points and frequencies for top support person categories

	Spouse	Mother	Father	Children	Brother	Sister	Friends
SSQ1	645	271	250	44	189	231	561
Freq.	73	41	36	8	30	28	114
SSQ2	626	142	126	185	92	102	508
Freq.	71	23	20	28	14	22	83
SSQ3	631	351	278	78	156	203	445
Freq.	71	50	39	28	24	38	86
SSQ4	657	343	274	221	165	184	372
Freq.	74	50	40	18	27	39	80
SSQ5	606	200	133	286	96	113	459
Freq.	68	29	21	45	15	22	83
SSQ6	653	215	139	80	63	126	329
Freq.	73	30	21	5	9	26	59
Total points	3818	1522	1200	894	761	959	2674
Total freq.	430	223	177	132	119	175	505

Notes. Freq. = frequency each category was identified by service members

Table 5. Highest-ranked themes in leadership support for service member wellbeing

Theme	Freq.	Freq. %	Score	Score %	Quote
Personal wellbeing					
Effective					
Communication/check-in	26	17%	60	17%	'Constantly checking in on me'
Time off/family time	24	15%	58	16%	'Provided time off'
Empowerment/encouragement	22	14%	53	15%	'Encouraged a team approach'
Support	14	9%	33	9%	'Moral support'
Providing Information/resources	10	6%	23	7%	'Help find support'
Total for question	155		354		
Ineffective					
Demanding/overworked	30	28%	50	19%	'Placed more focus on military regulations than recovery'
Poor behaviour	18	17%	32	12%	'Verbal abuse'
Lack of communication/check-ins	16	15%	28	11%	'Poor communication with families during deployment'
Lack of compassion	11	10%	22	9%	'Business as usual approach'
None/no Answer	9	8%	32	12%	*Service members indicated no ineffective behaviours by leaders
Total for question	106		259		
Familial wellbeing					
Effective					
Time off/family time	30	22%	82	26%	'Gave me more downtime'
Support	18	13%	41	13%	'Responded to needs while I was away'
Communication/check-in	16	12%	40	12%	'Periodic check in with family during deployment'
Providing Information/resources	11	8%	30	9%	'Making us aware of the opportunities available to us'
Household help	9	7%	21	7%	'Arranged transportation and living needs'
Total for question	137		321		
Ineffective					
Demanding/overworked	27	28%	73	31%	'Not giving leave when needed'
Lack of compassion	9	9%	22	9%	'Failed to understand family needs'
Lack of information/resources	7	7%	18	8%	'Not pass on information'
Lack of communication/check-ins	6	6%	12	5%	'Did not check in on family''
None/no Answer	13	14%	36	15%	*Service members indicated no ineffective behaviours by leaders
Total for question	96		236		

Notes. Freq. = Count of response per thematic category. Freq. % = Percentage of freq. divided by total frequency for question. Score = Total ranked scores of responses. Score % = percentage of total ranked scores divided by total score for question. Top five categories were included for each theme out of 14-17 categories, dependent on theme.

Discussion

This study utilised validated instruments to explore support for service members based on the MFFM. Unit, community and social supports—as well as leadership influences—were specifically investigated as external resources for resilience post-deployment. The MFFM was partially supported in RQ1: unit support was not predictive of emotional wellbeing during deployment, but was predictive at post-deployment. RQ2, with community support, did not predict emotional wellbeing for service members and did not support the MFFM. RQ3 examines family support and RQ4 explores leaders' impact on service members, highlighting their significant influence and serving as important external resources identified in the MFFM.

Unit support post-deployment was more impactful on emotional wellbeing than unit support during deployment, reflecting the stressful operational demands during deployment that limit psychological benefits of unit-based support. Conversely, post-deployment may often allow for greater reflection, interpersonal connection and the restoration of cohesion, enabling unit support to improve emotional resilience. The nuclear family emerged as the most significant source of social support. Spouses as the primary support for this married sample underscores these relationships. Past research, as this research does, suggests that unit support may bolster wellbeing⁶ and in this study, leaders may also impact wellbeing in a sample of more senior officers. Effective leadership communication promoted service member and family wellbeing. In contrast, ineffective leader support for wellbeing was most often identified as an imbalance between mission demands and the needs of service member and their family. The preliminary findings from this study on unit support, social support and leader influence establish a foundation of positive results for further investigation.

Limitations

The current study can be extended by using a more representative sample, adopting a more robust methodology and conducting further investigations into the measurement of the MFFM. The use of validated instruments that do not comprehensively measure the MFFM presents a limitation. For example, the DRRI Section L measure of community support does not capture the breadth of military and veteran service organisations' resources, thereby

preventing insights into the post-deployment support they offer. The convenient sample, though an underresearched group, overrepresents select service members (e.g., married, white, male officers; higher educated), preventing generalizability. Non-married service members were excluded, underscoring the need to understand the support systems parents and friends. Furthermore, delayed reporting of data collected between 2011 and 2013 is typical of military research due to information/operational security requirements and iterative rounds of qualitative and quantitative analyses. Despite these limitations, the lessons learned about resilience and wellbeing from this current study provide valuable insight, not previously reported.

Future research

Future research should expand participant recruitment to additional installations and locations to better represent the US military. Including service members from other geographic locations increases the likelihood that the sample will include participants who are currently underrepresented and better reflect the external resources required for the variety of experiences that military service presents. With an expanded sample, the measurement of the Military Family Fitness Model can be tested to comprehensively understand the influence of demands on service members' adaptive outcomes.

Although time has passed since data collection, the issues addressed in this study remain relevant and should continue to be prioritised by the current US military. With anticipated Large-Scale Combat Operations (LSCO) in future wars,³⁰ service members will benefit from innovative, validated solutions that directly improve unit cohesion and family support.

Conclusion

This preliminary study highlights the important role of unit and leader support in service members' resilience and wellbeing post-deployment. The nuclear family (e.g., spouse and children) is a central support; however, extended family (e.g., parents and siblings) and friends also provide unique support to service members throughout deployment. Military policy and leadership training, as well as social support training, may further enhance the integration of family support into mission management, with a focus on long-term resilience and the wellbeing of service members.

Corresponding Author: Stephen V Bowles,
stephen.bowles.ndu@gmail.com

Authors: S V Bowles^{1,2}, D Hoffman³, F M Cozzi⁴,
S Bujtor⁵, E Grieser⁶, S Kilar⁷, A P Siddall⁸, A Ghosh⁹,
J E M Novosel-Lingat¹⁰, T Hoyt¹¹,

Author Affiliations:

1 Institute of National Strategic Studies, National
Defense University

2 Uniformed Services University of the Health
Sciences

3 Department of Psychology, Northern Illinois
University

4 Cambridge Brain Tumour Imaging Laboratory,
Division of Neurosurgery, Department of Clinical
Neurosciences, Addenbrooke's Hospital,
University of Cambridge, Hills Road, Cambridge
CB2 0QQ, United Kingdom

5 Florida State University

6 United States Air Force

7 University of Pennsylvania

8 Georgetown University

9 University of Kansas

10 Tripler Army Medical Center

11 Defense Health Agency, Medical Affairs
Directorate

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References

1. McInerney SA, Waldrep E, Benight CC. Resilience enhancing programs in the U.S. military: An exploration of theory and applied practice. *Mil Psychol.* 2024 May 3;36(3):241-252. doi:10.1080/08995605.2022.2086418.
2. Vogt D, Smith B, Elwy R, et al. Predeployment, deployment, and postdeployment risk factors for posttraumatic stress symptomatology in female and male OEF/OIF veterans. *J Abnorm Psychol.* 2011;120(4):819-831. doi:10.1037/a0024457
3. Anderson L, Campbell-Sills L, Ursano RJ, et al. Prospective associations of perceived unit cohesion with post-deployment mental health outcomes. *Depress Anxiety.* 2019;36(6):511-521. doi:10.1002/da.22884
4. Bowles SV, Pollock LD, Moore M, et al. Total force fitness: The Military Family Fitness Model. *Mil Med.* 2015;180(3):246-258. doi:10.7205/milmed-d-13-00416
5. Cederbaum JA, Wilcox SL, Sullivan K, et al. The influence of social support on dyadic functioning and mental health among military personnel during postdeployment reintegration. *Public Health Reports®.* 2017;132(1):85-92. doi:10.1177/0033354916679984
6. Pietrzak RH, Johnson DC, Goldstein MB, et al. Psychosocial buffers of traumatic stress, depressive symptoms, and psychosocial difficulties in veterans of Operations Enduring Freedom and Iraqi Freedom: The role of resilience, unit support, and postdeployment social support. *J Affect Disord.* 2010;120(1-3):188-192. doi:10.1016/j.jad.2009.04.015
7. Britt TW, Wilson CA, Sawhney G, et al. Perceived unit climate of support for mental health as a predictor of stigma, beliefs about treatment, and help-seeking behaviors among military personnel. *Psychol Serv.* 2020;17(2):141-150. doi:10.1037/ser0000362
8. Campbell-Sills L, Flynn PJ, Choi KW, et al. Unit cohesion during deployment and post-deployment mental health: is cohesion an individual- or unit-level buffer for combat-exposed soldiers?. *Psychol Med.* 2022;52(1):121-131. doi:10.1017/S0033291720001786
9. Brailey K, Vasterling JJ, Proctor SP, et al. PTSD symptoms, life events, and unit cohesion in US soldiers: Baseline findings from the neurocognition deployment health study. *J. Trauma Stress.* 2007;20(4): 495-503. doi:10.1002/jts.20234

10. Williams J, Brown JM, Bray RM, Anderson Goodell EM, Olmsted K, and Adler AB (2016) Unit cohesion, resilience, and mental health of soldiers in basic combat training. *Mil Psych.* 28(4): 241-250. doi:10.1037/mil0000120
11. Military OneSource. MilLife guides: Returning home from your deployment [Internet]. Military OneSource. 2023. Available from: <https://www.militaryonesource.mil/resources/millife-guides/post-deployment-reintegration>
12. Drebing CE, Reilly E, Henze KT, et al. Using peer support groups to enhance community integration of veterans in transition. *Psychol Serv.* 2018;15(2):135-145. doi:10.1037/ser0000178
13. Hundt NE, Robinson A, Arney J, et al. Veterans' perspectives on benefits and drawbacks of peer support for posttraumatic stress disorder. *Mil Med.* 2015;180(8):851-856. doi:10.7205/milmed-d-14-00536
14. Hawkins BL, Townsend JA, Garst BA. Nature-based recreational therapy for military service members: A strengths approach. *Ther Recreat J.* 2016;50(1). doi:10.18666/trj-2016-v50-i1-6793
15. Russell CA, Russell, DW. It's not just showing up: How social identification with a veterans service organization relates to benefit-finding and social isolation among veterans. *Psychol Serv.* 2018;15(2):154-162. doi:10.1037/ser0000176
16. Flack M, Kite L. Transition from military to civilian: Identity, social connectedness, and veteran wellbeing. *PLoS One.* 2021;16(12). doi:10.1371/journal.pone.0261634
17. Pollmann JB, Nielsen AB, Andersen SB, Karstoft KI. Changes in perceived social support and PTSD symptomatology among Danish army military personnel. *Soc Psychiatry and Psychiatr Epidemiol.* 2022 Jul;57(7):1389-98. doi:10.1007/s00127-021-02150-5
18. Ormeno MD, Roh Y, Heller M, et al. Special concerns in military families. *Curr Psychiatry Rep.* 2020;22(12). doi:10.1007/s11920-020-01207-7
19. Iwamasa GY, Blais RK, Bryan CJ, et al. Preventing Suicide in the U.S. Military: Recommendations from the Suicide Prevention and Response Independent Review Committee. *Suicide Prevention and Response Independent Review Committee; 2023.*
20. Crain TL, Stevens SC. Family-supportive supervisor behaviors: A review and recommendations for research and Practice. *J Organ Behav.* 2018;39(7):869-888. doi:10.1002/job.2320
21. Mohr CD, Hammer LB, Brady JM, et al. Can supervisor support improve daily employee well-being? Evidence of supervisor training effectiveness in a study of veteran employee emotions. *J Occup Organ Psychol.* 2021;94(2):400-426. doi:10.1111/joop.12342
22. Wong JR, Crain TL, Brossoit RM, et al. Beyond just resilience: The important role of work-family resources for military service members. *Occ Health Sci.* 2022;6(3):425-450. doi:10.1007/s41542-022-00111-1
23. Military OneSource. Military community demographics: 2023 demographics profile [Internet]. Military OneSource. 2023. Available from: <https://www.militaryonesource.mil/data-research-and-statistics/military-community-demographics/2023-demographics-profile>
24. King DW, King LA, Vogt DS. Manual for the Deployment Risk and Resilience Inventory (DRRI): A Collection of Measures for Studying Deployment-Related Experiences of Military Veterans. Boston, MA: National Center for PTSD. 2003;10.
25. Sarason IG, Sarason BR, Shearin EN, et al. A brief measure of social support: Practical and theoretical implications. *J Soc Pers Relat* 1987;4(4):497-510. doi:10.1177/0265407587044007
26. Bowles SV, Neumaier ER, Hughes ER, et al. A preliminary analysis of psychological strengths: Service members' well-being post-deployment. *Mil Med.* Published online February 3, 2025. doi:10.1093/milmed/usaf011
27. Cohen J. *Statistical Power Analysis for the Behavioral Sciences.* 2nd ed. New York: Routledge; 1988.
28. Alwin DF, Krosnick JA. The measurement of values in surveys: A comparison of ratings and rankings. *Public Opin Q.* 1985 Winter;49:535-52. Available from: <http://www.jstor.org/stable/2748921>
29. Dym CL, Wood WH, Scott MJ. Rank ordering engineering designs: pairwise comparison charts and Borda counts. *Res Eng Des.* 2002;13:236-42. doi:10.1007/s00163-002-0019-8
30. Hoyt T, Hein C. Combat and operational stress control in the prolonged field care environment. *Mil Rev.* 2021 Sep-Oct;101(5):54-64. Available from: <https://www.armyupress.army.mil/Portals/7/military-review/Archives/English/SO-21/hoyt-combat-operational-stress/hoyt.pdf>

Appendix A

Rank order questions regarding leadership support for service members and family wellbeing

Please rank order the most effective things a leader has done to support your wellbeing?

1) _____ 2) _____ 3) _____

Please rank order the most effective things a leader has done to support your family wellbeing?

1) _____ 2) _____ 3) _____

Please rank order the most ineffective things a leader has done to affect your wellbeing?

1) _____ 2) _____ 3) _____

Please rank order the most ineffective things a leader has done to affect your family's wellbeing?

1) _____ 2) _____ 3) _____

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The Gender Debate: Effects of 10-weeks Strength Training on Operational Readiness for Females in the Military

C M Beaven, J J Rousseau, D T Edgar

Abstract

Introduction: Military service is a physically demanding occupation, and fewer women than men meet the military fitness standards, especially in manual handling and load carriage. Therefore, integrating women into physically demanding military roles requires effective physical conditioning programs to ensure operational readiness.

Methods: Twenty-eight female soldiers were randomly assigned to either a 10-week gender-specific physical training program (GEN: n=15) or to a control group that maintained regular military physical training (CON: n=13). Strength and endurance tests were assessed in conjunction with military-specific load-carriage tests.

Results: The GEN group showed significantly better improvements than CON for strength and power (all $d > 2.57$; $p < 3.98 \times 10^{-5}$), 2.4 km run ($d=0.70 \pm 0.23$; $p=1.46 \times 10^{-6}$), curl-ups ($d=0.38 \pm 0.38$; $p=0.0499$) and push-ups ($d=1.13 \pm 0.79$; $p=0.0073$). For the military-specific testing, GEN displayed *large* improvements when compared to CON for lift-and-place (3.8 ± 1.5 repetitions; $d=2.21$; $p=4.56 \times 10^{-5}$), battle manoeuvre (7.5 ± 4.1 m; $d=1.44$; $p=0.0008$), lift-and-carry (1.1 ± 0.7 repetitions; $d=1.29$; $p=0.0023$) and 4 km endurance march (87.4 ± 41.6 s; $d=1.87$; $p=0.0004$). Moderate to strong relationships were observed between changes in endurance and lower-body strength and a range of other tests ($r \geq 0.51$).

Conclusion: Female soldiers generally performed better when assigned to a gender-specific physical training program compared to CON after 10-weeks of prescribed physical training. Training is recommended to target endurance and lower-body strength, enhancing manual handling and load carriage to improve operational readiness among female soldiers.

Keywords: load carriage; endurance; manual handling; lower-body power

Introduction

In the New Zealand Army, women currently account for approximately 15% of total regular force personnel.¹ Service personnel, regardless of gender, are required to serve under the same conditions and to participate equally in all duties. The Land Combat Fitness Test (LCFT) is the New Zealand Army's combat fitness test performed by all soldiers regardless of gender. Data indicate that more females have failed the LCFT than their male counterparts over the last 5 years (59.5 vs 39.5%). This sex-based difference is predominantly due to the 'lifting and carrying' components of the LCFT. Manual handling is considered an essential task in the military. A review of the Australian Army identified that ~79% of physically demanding tasks

across employment categories were classified as manual material handling, including lifting, digging, carrying, pushing and pulling.² In addition, data from the New Zealand Defence Force and Australian Army reveal that proportionally, significantly more women are injured than men, with the majority of injuries occurring during physical training.^{3,4}

When considering military training, gender-neutral training (male and female personnel together) has typically been implemented and supported by militaries.^{5,6} Gender-neutral combat training is typically implemented by requiring all soldiers to perform the same core tasks and achieve the same minimum level of combat fitness, regardless of age or gender. However, there is growing evidence that

gender-neutral basic military training is a risk factor for overuse injury in women.⁷⁻⁹ A study examining the risk factors for injury during basic training in the United States Army reported twice the number of training-related injuries in women than men. This finding was attributed to the lower aerobic capacity in female recruits.¹⁰ In 1997, gender-neutral training for British Army recruits saw male and female recruits trained and assessed to a common standard.⁵ These authors subsequently reported that a 9% decrease in the number of women recruited into the British Army was observed, and overuse injuries sustained by women over the 4-month basic training more than doubled from 4.7% to 11.1%.

Given issues related to recruitment, injury rates and the successful attainment of standards for essential military manual handling tasks, gender-specific training has become a warranted topic in the military. Women typically have lower muscle mass, higher body fat and lower aerobic capacity than males.^{7,11-13} These sex differences are associated with lower muscle strength and endurance, placing female soldiers at a disadvantage compared with men when carrying out combat-specific tasks such as lifting, manual handling and marching with a load.^{11,14,15} Evidence demonstrates that concurrent resistance and aerobic training is the optimal training structure, facilitating adaptation to meet the physical demands of military service and reducing musculoskeletal injury risk.^{16,17} Further, a systematic review by Knapik and colleagues⁽¹⁸⁾ reported that the greatest improvements in load-carriage performance were observed when load-carriage training was accompanied by whole-body strength and aerobic training; however, gender-specific physical training that incorporates resistance training has not been investigated in the New Zealand Army (NZA). Therefore, this study aimed to determine whether gender-specific physical conditioning produces greater improvements in fitness than gender-neutral training and whether these improvements translate to both physical and operational fitness and performance in the NZA.

Materials and methods

Participants

Thirty-two female soldiers agreed to participate and were randomised via simple random assignment to either a 10-week female gender-specific physical training program (GEN; n=16) or a control group that performed standard military physical training (CON; n=16). Twenty-eight soldiers completed the 10-week course with attrition due to deployment, with 15 completing the GEN (age 32.6±7.1 y, weight 68.1±8.0 kg, height 167.5±5.9 cm) and 13 completing the CON (age 31.8±7.4 y, weight 67.7±8.3 kg, height 167.2±6.0 cm).

Procedures

The primary goal of the GEN was to increase the strength and endurance of the muscles involved in lifting and load carriage. In all cases, resistance training was individually prescribed, relevant to experience level and performed with proper technique. The CON maintained standard physical training practices ubiquitously prescribed across the NZA, including high volumes of low-intensity endurance training and bodyweight exercise circuits (Table 1). Of note, the CON group did not participate in any specific strength training, whereas the GEN group performed the prescribed 10-week specific strength and conditioning program outlined in Table 2. All exercise sessions were directly supervised by an Army Physical Training Instructor (PTI). Defence Force subject-matter experts qualified in strength and conditioning oversaw the entire program, monitored research participants' progress and modified training as needed.

Both groups participated in a series of pre- and post-tests that included maximal box squat strength, maximal bench press strength, and a loaded countermovement jump (CMJ). Both groups participated in a series of pre- and post-tests that included components of the NZA Required Fitness Level (RFL) and the LCFT. The RFL components included push-ups, curl-ups and a 2.4 km run. Components of the LCFT included lift-and-place, battle manoeuvre, lift-and-carry and a 4 km endurance march. Participants were fully informed of the procedures and signed a consent form before the start of the study, which was approved by the NZDF Ethics Committee.

Table 1. Weekly training schedule session outline for the prescribed 10-week gender-specific physical training program.

Week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday		
Week 1	Pre-testing	Pre-testing	Strength Program Introduction	Phase 1: Power/ Strength [Contrast] + HIIT	Patrol March (Patrol Order)	5 kg; 4 km	Active Recovery	OFF	
Week 2	Phase 1: Strength + HIIT: UL/LL Combination	M.A.S Running	2.5 km	30min Pool Swim / Walk + Mobility	Power Circuit	Load Carriage (Pack)	10 kg; 4 km	Active Recovery	OFF
Week 3	Phase 1: Strength + HIIT: UL/LL Combination	M.A.S Running	2.5 km	20min Bike “Spin” & 20min Pool Mobility	Phase 1: Power/ Strength [Contrast] + HIIT	Patrol March (Patrol Order)	7 kg; 5 km	Active Recovery	OFF
Week 4	Phase 1: Strength + HIIT: UL/LL Combination	M.A.S Running	3 km	30min Pool Swim / Walk + Mobility	Power Circuit	Load Carriage (Pack)	1 5kg; 5km	Active Recovery	OFF
Week 5	Phase 1: Strength + HIIT: UL/LL Combination	M.A.S Running	4 km	20min Bike “Spin” & 20min Pool Mobility	Phase 1: Power/ Strength [Contrast] + HIIT	Patrol March (Patrol Order)	10 kg; 6 km	Active Recovery	OFF
Week 6	Spin Class 40min	M.A.S Running		OFF	Group Walk	Pool + Stretch		Active Recovery	OFF
Week 7	Phase 2: Strength + HIIT: UL/LL Combination	M.A.S Running	3 km	30min Pool Swim / Walk + Mobility	Phase 2: Power/ Strength [Contrast] + HIIT	Load Carriage (Pack)	20 kg; 5 km	Active Recovery	OFF
Week 8	Phase 2: Strength + HIIT: UL/LL Combination	M.A.S Running	2.5 km	20min Bike “Spin” & 20min Pool Mobility	Power Circuit	Patrol March (Patrol Order)	10 kg; 7 km	Active Recovery	OFF
Week 9	Phase 2: Strength + HIIT: UL/LL Combination	M.A.S Running	4 km	30min Pool Swim / Walk + Mobility	Phase 2: Power/ Strength [Contrast] + HIIT	Load Carriage	20 kg; 6 km	Active Recovery	OFF
Week 10	Phase 2: Strength + HIIT: UL/LL Combination	M.A.S Running	3 km	20min Bike “Spin” & 20min Pool Mobility	Power Circuit	Recovery		Active Recovery	OFF
Week 11	Post-testing	Post-testing							
Note:	Programme dependant on injury and experience	Distance dependant on pre-run time	.	Recovery/ Unload	Programme dependant on injury and experience	Incremental Load	.	Individual recovery options	

HIIT: High-intensity interval training. UL/LL: Upper-limb or Lower-limb. MAS: Maximal aerobic speed running format of training. Patrol Order: Clothing and military equipment used for tactical patrolling (excludes backpack)

Table 2. Control group weekly training schedule session outline for regular unit physical training over 10-weeks.

Week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Week 1	Pre-testing	Pre-testing	Recovery Flush	Battle PT (60 mins)	Full Body Conditioning Mix (45-60 min)	OFF	OFF
Weeks 2-10	Full Body Circuit (45 min)	Aerobic Conditioning (45 min)	Sport & Recreational Activities (45-60 min)	Battle PT (60 mins)	Full Body Conditioning Mix (45-60min)	OFF	OFF
Week 11	Post-testing	Post-testing				OFF	OFF
Note	Body weight and functional movements.	Running, swimming, bike, PTI: Directed (PTI Choice).	Fitness testing if required. Sport activities, individual choice.	Aerobic/ strength-endurance mix. Carry, lift, place	Running, body-weight exercises, weights, ropes, cardio machines. PTI: Directed (PTI Choice)		

PTI: physical training instructor, PT: physical training

Strength and power testing

Lower-body strength (2–6RM box squat):

Following a warm-up comprising 5-minutes of static cycling, five minutes of static and dynamic stretching, a maximal box squat test of two to six-repetition maximum (2–6 repetition maximum [RM]) was used to determine strength pre and post the intervention.¹⁹ The test required participants to squat with an Olympic bar placed over the top of the shoulders and back, to a 90° knee angle determined by the buttocks resting on a box. The 2–6 RM achieved was used to estimate the 1 RM using the Epley Formula ($1 \text{ RM} = [1 + 0.0333 \times \text{reps}] \times \text{weight lifted [kg]}$).

Upper-body strength (2–6RM bench press):

A 2-6 RM bench press test was used to determine upper-body strength pre- and post-training. For the squat, a 2–6 RM was selected, as this is the lifting range where maximal strength can be achieved with a reduced risk of injury. The test required participants to lower a weighted Olympic bar to a 90° elbow angle, as determined by the upper arms being parallel to the ground while supine on a bench. The bar was then pushed back up until the arms were straight. The 2–6 RM achieved was used to estimate the 1 RM using the same Epley Formula applied to the 1 RM squat.

Power (countermovement jump CMJ, adjusted to 30% 1RM squat):

Participants were required to perform two sets of three jump squats with a load equivalent to 30% of the maximal box squat immediately after the squat

test. Participants were required to lower to a 45° angle at the knee, then jump explosively upward for maximum height in one fluid movement. An elastic band was placed at the 45° knee angle position under the buttocks to confirm the appropriate depth. Power (Watts) was measured with a Gymaware™ optical encoder (Kinetic Performance Technology, Canberra, Australia).

Army required fitness level (RFL) testing

The standard RFL evaluation was conducted by NZA PTIs pre- and post-intervention. This evaluation consisted of three key components: 1) curl-ups, 2) push-ups and 3) a 2.4 km road run as outlined by Edgar and colleagues.²⁰ Briefly, aerobic fitness was assessed using the 2.4 km road run, with the run times measured using a stopwatch to the nearest second. A curl-up protocol evaluated core muscular endurance and was performed with participants in a supine position on a standard curl-up mat on the gym floor, knees bent at 90° with feet flat on the floor. A PTI counted completed repetitions. There was no time limit on repetitions; however, they were to be completed continuously, with a pause of only 1–2 seconds between repetitions. Push-ups assessed upper-body muscular endurance. A repetition was counted by a PTI every time the full range of motion was completed until failure. For both push-ups and curl-ups, one warning was given for an incomplete repetition prior to participants being stopped by the PTI.

Land component fitness test (LCFT), operational readiness test

A modified LCFT operational readiness evaluation was conducted by NZA PTIs pre and post the 10-weeks of training. This evaluation consists of four key components: 1) jerry can lift-and-place, 2) battlefield manoeuvre, 3) jerry can lift-and-carry and 4) battlefield endurance 4 km march/run. Modifications allowed physical capacity in each area to be quantified rather than just a pass/fail, as is standard practice. For all components of the test, the soldier was required to wear military-issue clothing and footwear, body armour and a rifle weighing 20 kg. Five minutes of rest were allowed between each component of the LCFT.

Lift-and-place test

For the lift-and-place test, a water-filled jerry can weighing 20 kg was placed 1 m from the side of a 1.40 m platform. On a verbal 'Go' command, participants started from a standing position behind a mark 1 m away from the platform and lifted the jerry can onto the platform. To prevent injury, participants were directed to use their free hand to assist with the lifting. Once the jerry can was stable on the platform,

the participant stepped back so that both feet were behind the one-metre mark, which counted as one repetition. Participants were instructed to complete as many repetitions as possible in 2 minutes, with the total number of repetitions recorded.

Battlefield manoeuvre

For the battlefield manoeuvre test, a 50 m area was marked at 10 m intervals. The soldier's start and finish position for each repetition was kneeling on one knee with the opposed leg supporting, the weapon raised and aimed in the firing position at the shoulder. On a verbal 'Go' command, participants were required to stand up and run to the first ten-metre mark, finishing in the same firing position (kneeling unsupported). Participants held the weapon at the shoulder in a firing position for an individual 3-second count (fire-one, fire-two, fire-three) before standing and progressing with the assessment. Participants were instructed to complete as many repetitions as possible in 2 minutes, and the total distance was recorded in metres.

Table 3. Strength and power and required fitness level test performance changes across a 10-week training program between the gender-specific physical training program group (GEN, n=15) and control group (CON, n=13).

		Pre-training	Post-training	% Δ pre-post	Interaction effect	Effect size (Cohen's d)
Strength and power						
Box squat 1 RM (kg)	GEN	97.8 $\pm$ 42.2	120.1 $\pm$ 38.6 *, #	26.6	1.37 $\times$ 10 ⁻⁵	2.58 $\pm$ 0.89
	CON	84.2 $\pm$ 11.8	83.5 $\pm$ 10.2	-0.6		Large
Bench press 1 RM (kg)	GEN	47.1 $\pm$ 13.6	53.3 $\pm$ 14.3 *	12.6	2.59 $\times$ 10 ⁻⁵	2.57 $\pm$ 0.92
	CON	50.5 $\pm$ 7.1	50.9 $\pm$ 7.1	0.9		Large
Counter movement jump (W)	GEN	1550 $\pm$ 260	2090 $\pm$ 312 *, #	30.2	3.98 $\times$ 10 ⁻⁵	3.02 $\pm$ 1.10
	CON	1484 $\pm$ 242	1486 $\pm$ 240 *	0.1		Large
Required fitness level						
2.4 km run (min:s)	GEN	12:14 $\pm$ 1:18	11:34 $\pm$ 1:11 *	5.5	1.46 $\times$ 10 ⁻⁶	0.70 $\pm$ 0.23
	CON	11:42 $\pm$ 0:42	11:47 $\pm$ 0:41	0.7		Moderate
Curl-ups (repetitions)	GEN	98 $\pm$ 25 #	109 $\pm$ 14 *, #	13.9	0.0499	0.38 $\pm$ 0.38
	CON	71 $\pm$ 24	71 $\pm$ 24	0.2		Small
Push-ups (repetitions)	GEN	17 $\pm$ 7	21 $\pm$ 6 *	29.7	0.0073	1.13 $\pm$ 0.79
	CON	20 $\pm$ 5	21 $\pm$ 6 *	7.5		Large

* significantly different from the pre-training value; # significantly different from the corresponding CON value. Quantitative descriptions of the Cohen's d are based on thresholds of <0.20, 0.20, 0.50 and 0.80 for trivial, small, moderate and large, respectively.

Lift-and-carry test

For the lift-and-carry test, two 20 kg jerry cans were placed on one side of a 25 m grid for each individual being assessed. On the verbal command 'Go', participants lifted the two jerry cans and commenced walking 25 m to the opposite side of the grid. On reaching the far side of the grid, participants placed the jerry cans on the ground, stepped forward, turned around, lifted the jerry cans and returned to the starting line. Participants were instructed to complete as many 25-m repetitions as possible in 2 minutes, which were recorded.

Battlefield endurance (4 km)

The battlefield endurance test was an individually timed 4 km endurance time trial. The test track was on a sealed flat road, with markers at 1, 2, 3 and 4 km. Soldiers were instructed to complete the 4 km course as quickly as possible, with their time recorded in minutes.

Statistical analyses

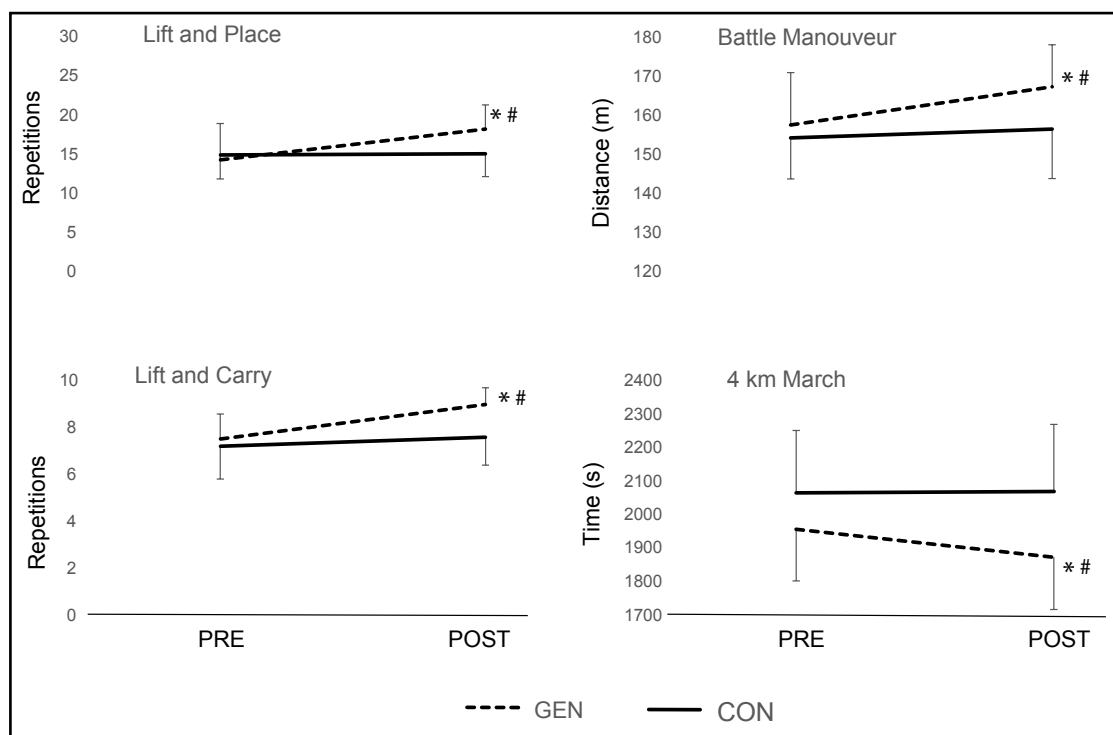
Descriptive statistics for the groups are shown as mean $\pm$ SD values, while Cohen's *d* effect sizes are represented as mean $\pm$ 95% confidence intervals. All statistical analyses were performed using the

Statistical Package for the Social Sciences (V. 27.0, SPSS Inc., Chicago, IL), with statistical significance set at $p \leq 0.05$. To determine whether there were differences between groups in the physical performance measures, a two-way repeated-measures analysis of variance (ANOVA) was performed for *Group* (GEN or CON) and *Time* (pre and post) on the performance data. Analysis of the distribution of residuals was verified visually with histograms and also using the d'Agostino-Pearson test of normality. Magnitudes of the standardised effects between pre and post-physical tests were calculated using Cohen's *d* and interpreted using thresholds of <0.20, 0.20, 0.50 and 0.80 for *trivial*, *small*, *moderate* and *large*, respectively. Effects were deemed unclear if the 95% confidence intervals overlapped the thresholds for both *small* positive and negative effects ($d \pm 0.2$). To assess relationships among metrics, Pearson's *r*-values were calculated with thresholds of 0.3, 0.5 and 0.7 for high, moderate and low correlations, respectively.

Results

Normality was confirmed for the test measures (d'Agostino-Pearson, $p > 0.05$). There were no differences in age, height, weight or performance data prior to the intervention ($p > 0.05$), except for

Figure 1. Land combat fitness test components pre-post 10-weeks training.



* significantly different from the pre-training value; # significantly different from the corresponding CON value.

curl-ups. The strength and lower-body power data are presented in Table 3. The improvement in the GEN group was superior to the CON group for maximal lower-body strength (26.5%; 23.0 ± 7.9 kg), maximal upper-body strength (11.1%; 5.7 ± 2.0 kg), and maximal lower-body power (26.0%; 538.7 ± 196.3 W). For the RFL test components, compared with the CON group, GEN decreased the 2.4 km run time by 6.5% (44.7 ± 14.8 s) and increased curl-ups by 12.8% (10.7 ± 9.6 repetitions) and push-ups by 20.0% (2.4 ± 1.7 repetitions; Table 3). These numbers corresponded to a 93% pass rate for female soldiers in the GEN group, compared with 69% in the CON group.

For the LCFT, the GEN demonstrated *large* significant improvements relative to the CON group for the lift-and-place (26.1%; 3.8 ± 1.5 repetitions; $d = 2.21$; $p = 4.56 \times 10^{-5}$), battle manoeuvre (4.7%; 7.5 ± 4.1 m; $d = 1.44$; $p = 0.0008$), lift-and-carry (12.1%; 1.1 ± 0.7 repetitions; $d = 1.29$; $p = 0.0023$), and 4 km endurance march (4.6%; 87.4 ± 41.6 s; $d = 1.87$; $p = 0.0004$; see Figure 1).

When pre- and post-test data were combined, there were high correlations between maximal upper-body strength and maximal lower-body strength ($r = 0.74$; $p = 1.11 \times 10^{-10}$) and between performance in the battle manoeuvre and the curl-up test ($r = 0.81$; $p = 2.49 \times 10^{-14}$). Interestingly, the battlefield endurance 4 km march showed no moderate or strong relationships with any of the other tests (all r -values ≤ 0.38), indicating that this test assessed a relatively independent physical capacity. When the change scores for all tests were examined, there was a strong linear relationship between the change in maximal lower-body strength and the change in lower-body power ($r = 0.91$; $p = 9.65 \times 10^{-12}$), such that an increase of 1 kg in lower-body strength approximated a 22.3 W improvement in lower-body power. Overall, the improvement in the 2.4 km road run was at least moderately related ($r \geq 0.51$) to seven of the 10 tests performed. Similarly, the improvement in maximal lower-body strength was at least moderately related ($r \geq 0.51$) to six of the tests.

Discussion

The results of this study demonstrate that the ability of female soldiers to perform physically demanding military occupational tasks can be significantly improved following a 10-week periodised training program including resistance training. Maximal occupational load carriage, as measured by the lift-and-place and the repetitive lift-and-carry task, improved in the GEN group relative to the control group that followed standard military training.

Load-carriage performance also increased, as demonstrated by a reduction in time to complete the 4 km march carrying a total weight of 20 kg. This study illustrates the performance gains female soldiers can achieve through a gender-specific physical training program and provides military leaders with insights into policies to fully integrate women into combat occupations.

The physiological demands on female soldiers in combat roles have increased due to the evolution of modern warfare, and there is a need for strength and conditioning programs to address these challenges. The physical requirements for combat readiness include lifting and carrying heavy loads in hostile environments. In military-oriented studies, it has been reported that women have up to 55% less muscle strength than men in both the upper and lower body.^{10,13,21} When considering most physical and military occupational performance variables, it has also been shown that sex differences are present, which disadvantage women,¹¹ and predispose female soldiers to fail to attain required combat fitness standards.²² The traditional focus on aerobic exercise in military training may lead to inadequate preparation for high-intensity tasks, resulting in injuries and lost training days.²³

This traditional approach to military training has focused on high volumes of low-intensity endurance training,¹¹ which often compromised training adaptations, especially for women.¹⁷ Although the preference for high-volume, low-intensity endurance training in the military is common, high-intensity activities such as carrying heavy loads and sprinting for short durations are typical of military tasks and are related to muscular strength. Herein, we demonstrated that the standard physical training practice prescribed by the NZA did not significantly improve either upper- or lower-body strength. Modern military operations are increasingly physically demanding, requiring maximal strength and power to optimise military readiness.²⁴ In this study, it was evident that operational readiness is likely enhanced through the prescribed strength and power training, with demonstrable improvements in load carriage and manual handling tasks. Varra and colleagues reported that upper-body maximal strength was strongly and positively correlated with moderate (29 kg) and heavy (45 kg) load-carriage performance.¹⁴

Recent studies with both recruits¹⁶ and active-duty soldiers²⁵ have supported the use of both whole-body strength and aerobic training. Of note, maximal strength, power and oxygen uptake have been reported as important predictors of operational

performance.^{26,27} Our data highlighted that standard military training was relatively ineffective at improving aerobic fitness (2.4 km road run), with no significant decrease in run time observed in the CON group. It was also apparent from the overall group data that improvements in aerobic conditioning were associated with improvements across a range of other tests, including the curl-up from the RFL fitness test, as well as the lift-and-place, battlefield manoeuvre and the battlefield endurance 4 km march from the LCFT operational readiness test.

Low levels of aerobic fitness have also been linked to injury during combat training.²³ To reduce injuries, periodised training programs for female soldiers that include both aerobic and resistance training, incorporating strength, agility, and power components, are recommended.^{28,29} In studies of workload tolerance and injury frequency in the military, female soldiers exerted themselves more than their male counterparts when performing typical tasks aimed at achieving a specified output and experienced fatigue earlier than males.²¹ Furthermore, fatigue is a major underlying cause of injuries, and female soldiers are more prone to being injured than males when conducting similar military tasks.³⁰ Therefore, training to enhance endurance and aerobic fitness is clearly indicated. Additionally, previous research has shown that 8 weeks of physical training that combines aerobic and resistance training results in changes in bone biomarkers indicative of increased bone mass,³¹ an important consideration when developing exercise programs for female soldiers who are at increased risk of stress fractures compared to males.⁸ As such, appropriate training is essential to ensure both operational readiness and health during and after military careers.³²

To address the strength limitations of female soldiers compared to males reported in a military context,^{10,13,33} the current study aligns with previous studies showing that conditioning programs consisting of resistance and cardiovascular training in female soldiers improve physical performance, including adaptations in strength, power and endurance. Nindl and colleagues reported that a 6-month conditioning program that included resistance training improved lifting and load carriage,³³ but 22% still fell short of the requirements for military occupational

specialties. Our data show that improvements in lower-body strength were associated with improvements in other tests, including lower-body power, the 2.4 km road run, load and carriage and the battlefield endurance 4 km march. Therefore, resistance training is a valuable stimulus for women to enhance their strength and successfully undertake military tasks. We also showed that changes in 2.4 km run performance were linked to the lift-and-place, the battlefield manoeuvre and the battlefield endurance 4 km march. These data align with Withrow and colleagues, who linked 2-mile (~3.2 km) run performance with a loaded tactical foot march.¹⁵

The ultimate goal of any military PT program should extend beyond achieving measurable improvements in physical fitness tests. It should include considerations of daily mission requirements, operational tempo and the safety and effectiveness of training.²⁸ Soldiers require a strong foundation of fitness encompassing a range of physical capabilities for operational readiness and health. As women increasingly participate in diverse military roles, the importance of appropriately tailored physical training is paramount. Appropriate strength and conditioning programs are required to meet the physical demands of military tasks and mitigate injuries. In this study, a female-specific physical training program improved fitness components to a greater extent than the regular training program, reinforcing the importance of incorporating resistance exercises into training designed to improve operational readiness.¹¹ Participants demonstrated significantly greater improvements in strength, power, aerobic capacity and specific military fitness tests, which could ultimately lead to lower injury rates, decreased attrition and enhanced operational readiness. Aerobic fitness and lower-body strength and power should form the foundation of training programs designed to enhance operational readiness for female soldiers.

Corresponding Author: Christopher Martyn Beaven, martyn.beaven@waikato.ac.nz

Authors: C M Beaven³, J J Rousseau¹, D T Edgar²

Author Affiliations:

1 New Zealand Defence Force

2 New Zealand Army

3 The University of Waikato

References

1. Edgar DT, Gill N, D., Driller MW. Physical characteristics of New Zealand Army, Navy and Airforce officer trainees' over a 6-week joint officer induction course. *The Journal of Sport and Exercise Science*. 2020;4(2):63-71.
2. Carstairs GL, Ham DJ, Savage RJ, Best SA, Beck B, Billing DC. A method for developing organisation-wide manual handling based physical employment standards in a military context. *Journal of Science & Medicine in Sport*. 2018;21(11):1162-7.
3. Rousseau JJ. Lower Limb Injury Prevention in the New Zealand Army: Massey University; 2019.
4. Schram B, Orr R, Pope R. A profile of injuries suffered by female soldiers serving in the Australian Army. *BMC Public Health*. 2022;22(1):813.
5. Gemmell IM. Injuries among female army recruits: a conflict of legislation. *Journal of the Royal Society of Medicine*. 2002;95(1):23-7.
6. Rayson M, Holliman D, Belyavin A. Development of physical selection procedures for the British Army. Phase 2: relationship between physical performance tests and criterion tasks. *Ergonomics*. 2000;43(1):73-105.
7. Finestone AS, Milgrom C, Yanovich R, Evans R, Constantini N, Moran DS. Evaluation of the performance of females as light infantry soldiers. *BioMed Research International*. 2014;2014:572953.
8. Gam A, Goldstein L, Karmon Y, Mintser I, Grotto I, Guri A, et al. Comparison of stress fractures of male and female recruits during basic training in the Israeli anti-aircraft forces. *Military Medicine*. 2005;170(8):710-2.
9. Geary KG, Irvine D, Croft AM. Does military service damage females? An analysis of medical discharge data in the British armed forces. *Occupational Medicine*. 2002;52(2):85-90.
10. Knapik JJ, Canham-Chervak M, Hoedebecke E, Hewitson WC, Hauret K, Held C, et al. The fitness training unit in U.S. Army basic combat training: physical fitness, training outcomes, and injuries. *Military Medicine*. 2001;166(4):356-61.
11. Nindl BC. Physical training strategies for military women's performance optimization in combat-centric occupations. *Journal of Strength & Conditioning Research*. 2015;29 S101-S6.
12. Libster D, Heled Y, Shapiro Y, Epstein Y. Physiological aspects of women in combat. *Harefuah*. 1999;137(11):521-5.
13. Yanovich R, Evans R, Israeli E, Constantini N, Sharvit N, Merkel D, et al. Differences in physical fitness of male and female recruits in gender-integrated army basic training. *Medicine & Science in Sports & Exercise*. 2008;40(11 Suppl):S654-S9.
14. Vaara JP, Groeller H, Drain J, Kyröläinen H, Pihlainen K, Ojanen T, et al. Physical training considerations for optimizing performance in essential military tasks. *European Journal of Sport Science*. 2022;22(1):43-57.
15. Withrow KL, Rubin DA, Dawes JJ, Orr RM, Lynn SK, Lockie RG. Army combat fitness test relationships to tactical foot march performance in reserve officers' training corps cadets. *Biology*. 2023;12(3).
16. Burley SD, Drain JR, Sampson JA, Nindl BC, Groeller H. Effect of a novel low volume, high intensity concurrent training regimen on recruit fitness and resilience. *Journal of Science & Medicine in Sport*. 2020;23(10):979-84.
17. Kyröläinen H, Pihlainen K, Vaara JP, Ojanen T, Santtila M. Optimising training adaptations and performance in military environment. *Journal of Science & Medicine in Sport*. 2018;21(11):1131-8.
18. Knapik JJ, Harman EA, Steelman RA, Graham BS. A systematic review of the effects of physical training on load carriage performance. *Journal of Strength & Conditioning Research*. 2012;26(2):585-97.
19. Bosco C, Colli R, Bonomi R, Von Duvillard SP, Viru A. Monitoring strength training: neuromuscular and hormonal profile. *Medicine and Science in Sports and Exercise*. 2000;32(1):202-8.
20. Edgar DT, Beaven CM, Gill ND, Zaslon J, Driller MW. Operation early-bird: Investigating altered light exposure in military barracks on sleep and performance—a placebo-controlled study. *Journal of Sleep Research*. 2023;32(4):e13837.
21. Epstein Y, Yanovich R, Moran DS, Heled Y. Physiological employment standards IV: integration of women in combat units physiological and medical considerations. *European Journal of Applied Physiology*. 2013;113(11):2673-90.

22. Wood PS, Grant CC, du Toit PJ, Fletcher L. Effect of mixed basic military training on the physical fitness of male and female soldiers. *Military Medicine*. 2017;182(7):e1771-e9.
23. Jones BH, Hauret KG, Dye SK, Hauschild VD, Rossi SP, Richardson MD, et al. Impact of physical fitness and body composition on injury risk among active young adults: A study of Army trainees. *Journal of Science & Medicine in Sport*. 2017;20:S17-s22.
24. Kraemer WJ, Szivak TK. Strength training for the warfighter. *Journal of Strength & Conditioning Research*. 2012;26:S107-S18.
25. Heilbronn BE, Doma K, Gormann D, Schumann M, Sinclair WH. Effects of periodized vs. nonperiodized resistance training on army-specific fitness and skills performance. *Journal of Strength & Conditioning Research*. 2020;34(3):738-53.
26. Angeltveit A, Paulsen G, Solberg PA, Raastad T. Validity, reliability, and performance determinants of a new job-specific anaerobic work capacity test for the Norwegian Navy special operations command. *Journal of Strength & Conditioning Research*. 2016;30(2):487-96.
27. Rhea MR, Alvar BA, Gray R. Physical fitness and job performance of firefighters. *Journal of Strength & Conditioning Research*. 2004;18(2):348-52.
28. Bullock SH, Jones BH, Gilchrist J, Marshall SW. Prevention of physical training-related injuries recommendations for the military and other active populations based on expedited systematic reviews. *American Journal of Preventative Medicine*. 2010;38:S156-S81.
29. Sauers SE, Scofield DE. Strength and conditioning strategies for females in the military. *Strength & Conditioning Journal*. 2014;36(3):1-7.
30. Friedl KE, Evans RK, Moran DS. Stress fracture and military medical readiness: bridging basic and applied research. *Medicine & Science in Sports & Exercise*. 2008;40:S609-S22.
31. Evans RK, Antczak AJ, Lester M, Yanovich R, Israeli E, Moran DS. Effects of a 4-month recruit training program on markers of bone metabolism. *Medicine & Science in Sports & Exercise*. 2008;40:S660-S70.
32. Mikkonen RS, Drain JR, Vaara J, Nindl B, Kyröläinen H. Importance of strength training for sustaining performance and health in military personnel. *BMJ Military Health*. 2025;171(5):413-7.
33. Nindl BC, Eagle SR, Frykman PN, Palmer C, Lammi E, Reynolds K, et al. Functional physical training improves women's military occupational performance. *Journal of Science & Medicine in Sport*. 2017;20:S91-S7.

Evaluation of Self-Perceptions of Physical Demand and Physical Fitness of Volunteers During the Adaptation Internship of Reserve Officers of the 2nd Class of the Brazilian Air Force

V Damasceno, G B Fanaro, A Rosado, I Santos, G van Keulen, H G Resende,

Abstract

The recruitment and mobilisation of higher education professionals for temporary military service occurs annually in the Brazilian Air Force occur annually. After the selection process, volunteers complete a Technical Adaptation Internship to prepare future junior officers for the specific conditions of military service. These courses generally last approximately two months and have high physical, cognitive and psychological demands, but there are no reported data. This study aimed to evaluate self-perceptions of physical demands and physical fitness and their relationships with physical tests and habitual physical activity levels of volunteers in the training course for the 2nd class reserve officers. The sample consisted of 72 volunteers (47 females), and questionnaires prepared by the authors were used to collect self-reported physical fitness data and to assess perceived course demand. Statistical analyses were performed using JASP 0.83 for Windows. The results indicate that the physical, cognitive, and psychological demands were self-perceived as very demanding by 65% of the sample. Furthermore, no differences were found between the sexes for the physical, cognitive and psychological aspects of work demand. Perceived demand was high and similar between sexes.

Keywords: Workload; Cognitive aspects; Physical aspects; Military personnel; Brazilian Air Force.

Introduction

The Brazilian Air Force (FAB) annually selects higher education professionals for temporary military service as Officers. Those selected participate in the Technical Adaptation Internship (TAI), structured into three phases, with the 60-day military instruction being the initial stage. This phase includes intensive training in military regulations, physical conditioning, leadership and other specific knowledge, aimed at adapting civilians to military life and preparing them to perform their duties in the FAB.¹

To continuously improve TAI planning, it is crucial to understand the relationship between the required physical fitness and the demands of military functions (the level of physical demand), a concept fundamental to developing a Physical Employment Standard (PES) as described in the literature.²⁻⁴ This

concept, which is fundamental in organisational psychology and human resource management, encompasses the physical, psychological, social, and organisational demands of work^{5,6} and often involves physical ability tests to select workers with minimum competencies for operational tasks.^{7,8}

In the demanding military environment, physical fitness is a fundamental requirement for meeting operational demands. This is assessed every six months through a detailed battery of physical fitness tests. Despite the controversy over which tests—general and specific—are more effective for measuring the actual physical capacity of military personnel, in general, these tests ensure that the professional is physically prepared for their missions.^{2,9}

At the same time, all Brazilian Armed Forces (Army, Navy and Air Force) allocate daily time for physical training, with a focus on optimising physical

performance, following specific guidelines regarding the type, intensity and duration of exercises, usually found in normative instructions.¹⁰⁻¹²

This philosophy, which integrates the analysis of work demands with the need for physical preparation, is based on the proven relationship between physical fitness and success in work activities. It also significantly reduces the risk of musculoskeletal injuries.^{9,13-18}

Although the literature offers objective instruments to measure work demands (such as cortisol analysis, heart rate monitoring and accelerometers) and physical fitness (via physical tests), practical application faces challenges such as high equipment costs, technical complexity and time requirements, especially for work demands.^{19,20} A possible alternative to objective instruments is to use subjective perception as an alternative measure to identify work demands. Some studies suggest that individuals with high physical capacity are more accurate in assessing their own capacity²¹ and are probably more sensitive and precise in inferring their own work demands.

Given the above, it is hypothesised that military personnel adjust their physical training by prioritising specific attributes such as cardiorespiratory capacity, muscular strength and flexibility, as they perceive these to be necessary for their daily professional duties. This self-selection process, driven by occupational demands, has been explored in a broader context of person-job fit within military performance literature. To substantiate this hypothesis, we draw upon Self-Determination Theory (SDT), which distinguishes between autonomous and controlled motivation. The central concept is that in an autonomy-supportive work environment, extrinsic motivation (such as a physical fitness requirement) can be internalised, becoming a form of autonomous motivation.^{22,23} In this way, a professional requirement (an extrinsic motivation) for military personnel can transform into a personal and self-determined goal, which leads to more enduring and effective motivation for training.²² A study by Raabe et al. on US Army ROTC cadets showed that, while participants reported high levels of self-determined motivation, they perceived limited autonomy support from their leaders, suggesting a disconnect between the cadets' intrinsic motivation and the instructors' leadership style.²² This finding suggests that leadership alone may not be the sole determinant of the desire to engage in military physical training. This allows for the hypothesis that other factors, such as self-perception of one's physical fitness, may influence how occupational demands are perceived and, consequently, addressed.

Understanding candidates' perceptions of the demands of the TAI is crucial for the FAB. It would allow identification of areas for improvement and enable adjustment of the training program to optimise its effectiveness. This would involve a strategic balancing of physical, cognitive and psychological demands with participants' capacity and wellbeing, ultimately reducing the risk of injuries and course dropout.²⁴ For instructors, this study provides valuable feedback to adapt pedagogical and leadership approaches. For candidates, it offers insights into their capabilities and areas for improvement, which can aid in their career planning within the FAB and in their transition to the unpaid reserve.

Considering the existing gap in data on candidates' perceptions of TAI requirements and their relationship with self-perceived physical fitness, this study aims to evaluate these self-perceptions. We will assess their relationships with objective physical tests and the level of habitual physical activity among volunteers in the FAB Reserve Officer Training Course. This research seeks to provide empirical evidence for the link between self-perception and training decisions, a relationship previously based primarily on observational and anecdotal insights.

Method

This study is characterised as cross-sectional and correlational.²⁵

In the 2024 selection process, 72 candidates, men and women, enrolled for temporary military service as officers.

The inclusion criteria encompassed all candidates actively enrolled in the TAI who provided explicit consent to participate in the research by signing the informed consent form. The exclusion criteria comprised candidates who were absent during data collection, those who declined to participate in the research, and individuals who did not fully complete the questionnaire. This study received approval from the Research Ethics Committee of the Galeão Air Force Hospital under protocol number 2 486 972.

Data collection was carried out with the authorisation of the Commander of the military organisation responsible for training the aspirants.

To collect the data, the candidates were gathered in an auditorium, where the officer responsible for the instruction and the researchers presented and explained the research, respecting everyone's right to participate or not by expressing their decision through the Free and Informed Consent Form.

The TAI lasts approximately 60 days. The military instruction and physical training phase occurs during the first 45 days of the TAI. The physical fitness tests (PFTs), which are part of the official curriculum, were administered on the final day of this specific physical training phase. The self-reported physical demands questionnaire was administered on the same day, immediately following the PFTs.

Battery Test—Brazilian Air Force

The Physical Fitness Assessment Test conducted within the Brazilian Air Force aims to evaluate endurance and physical strength through the following tests²⁶:

- I. Push-up test—Initially, the arms should be extended with the palms on the ground. Men should keep their legs straight with their feet on the ground. Women may rest their knees on the ground. The flexion movement is counted when the back line passes slightly beyond the height of the elbow. There is no time limit for this test, and the minimum number of repetitions required is 21 for men and 12 for women.
- II. Abdominal crunch or Sit-up test—To perform this test, individuals must lie on their back with their knees bent at 90° and their feet fixed. Flexion will be considered when the elbows touch the thighs. The minimum number of repetitions required is 34 for men and 29 for women, with a time limit of 1 min.
- III. Cooper test (12-minute run)—Athletics track or any other horizontal course with a slope of no more than 1/1000 m is used. Men must cover a minimum distance of 2200 metres and women 1650 metres in 12 min.

The data collection instrument was divided into four parts: 1) Respondent Characterization Data (demographic information); 2) Habitual Physical Activity Questionnaire;²⁷ 3) Self-Declared Physical Fitness and Perceived Level of Demand Questionnaire (by the authors); and 4) Eating Habits Questionnaire (by the authors). As the authors developed sections 3 and 4 of the questionnaire, which have not been published previously, they have been included as supplementary material to this article.

The Habitual Physical Activity Questionnaire was translated and adapted to Brazilian Portuguese,²⁷ consisting of 16 items containing three subscales: work index, sports index and leisure index.

The following equations were employed to calculate the subscales:

- Work index: $[I1 + (6 - I2) + I3 + I4 + I5 + I6 + I7 + I8]/8$
- Sports index: $[I9 + I10 + I11 + I12]/4$
- Leisure index: $[(6 - I13) + I14 + I15 + I16]/4$

The score for Item 1 was defined by the intensity of physical activity, with scores of 1 (<3 METs), 3 (3 to >6 METs) or 5 (≥6 METs). For this, the Physical Activity Compendium proposed by Ainsworth et al.²⁸ was used. For Item 9, a categorisation was performed and the score assigned was based on intensity, time and proportion, according to the information below:

- Which exercise do you practice most often? INTENSITY: 0.76; 1.26; 1.76
- How many hours per week? TIME: $< 1 = (0.5) - 1/2 = (1.5) - 2/3 = (2.5) - 3/4 = (3.5) - > 4 = (4.5)$
- How many months per year? PROPORTION: $< 1 = (0.04) - 1/3 = (0.17) - 4/6 = (0.42) - 7/9 = (0.67) - > 9 = (0.92)$
- For all other items, the score varied between 1 and 5, with items 6 to 8 and 10 and 11 having inverted scores (from 5 to 1).

For the physical fitness index, participants rated their perception of the components of aerobic capacity, muscular strength, localised muscular endurance, flexibility and body composition, ranging from 'very poor' (1) to 'very good' (5). For the course demand index, the assessment considered the physical (cardiorespiratory and muscular), cognitive and psychological aspects, ranging from 'low demand' (1) to 'high demand' (5).

The self-perceived physical fitness index was calculated from the average of the scores of four components: aerobic capacity, muscular strength, localised muscular endurance and flexibility. The self-perceived physical demand index was calculated as the average of the physical aspects (cardiorespiratory and muscular) scores. A 'Perceived Physical Reserve Index (PPRI)' was then created by subtracting the perceived general physical fitness index from the perceived physical demand level index, and the result was classified as negative (< -5), neutral (-5 to +5), or positive (> +5).

After collection, the data were tabulated and validated in Excel. Descriptive and inferential statistics were used for data analysis. To verify the difference in means between groups (men versus women), the independent Student's t-test was used. To verify the correlation of the indices of self-perception of physical effort and physical fitness with the results of the physical tests and the scores of the Habitual Physical Activity Questionnaire, the Pearson correlation test

and Fisher's *d* effect size were used. To assess the differences among the positive, neutral, and negative groups, one-way ANOVA with Tukey's post hoc was performed. For all analyses, JASP software was used, and graph preparation was performed in GraphPad Prism 8.0. The significance level adopted for all tests was $p \leq 0.05$.

Results

Table 1 presents the anthropometric characteristics and mean values of the physical tests of the group of volunteers from the aspirants' cadre, divided by sex. Body mass and height showed significant differences between the sexes, whereas age and body mass index (BMI) did not. The other variables did not exhibit significant differences. For all physical test variables, significant differences in mean scores between sexes were found.

Table 2 presents the mean values for daily cycling time, work index, sports index, leisure index and

total score, divided by sex. Daily cycling time, leisure index and total score showed significant differences between the sexes.

Table 3 shows the correlations between the indices of self-perception of physical demand and self-perception of physical fitness and various variables related to physical fitness and habitual physical activity.

Figure 1 presents the distributions of self-perceptions of physical demand (SPD) and general physical fitness (SPF), general and by sex.

Figure 2 shows the differences between the self-perception index of physical demand and general physical fitness.

Table 4 presents the mean and standard deviation values of the various variables categorised by negative and positive physical demand level index.

Table 1. Anthropometric characteristics of the volunteers of the Aspirants cadre

	Men (n= 25)		Women (n= 47)		<i>t Student independent</i>	
	Mean	Stardand deviation	Mean	Stardand deviation	<i>t-value</i>	P
Age (year)	34.20	4.43	34.85	3.95	0.638	0.525
Body mass (kg)	81.00	7.88	66.55	8.87	-6.832	0.001
Stature (cm)	176.68	4.75	164.55	5.67	-9.124	0.001
BMI (kg·m ⁻²)	25.96	2.44	24.59	3.15	-1.905	0.064
Push-up test (reps)	36.56	10.85	25.30	8.79	-4.776	0.001
Abdominal test (reps)	48.28	7.72	35.51	9.32	-5.863	0.001
Running (12 minutes) (m)	2430.80	259.65	2031.28	243.01	-6.837	0.001
VO2máx (mL·kg ⁻¹ ·min ⁻¹)	42.82	5.77	33.94	5.40	-6.499	0.001

Table 2. Average values of the Habitual Physical Activity Questionnaire divided by sex.

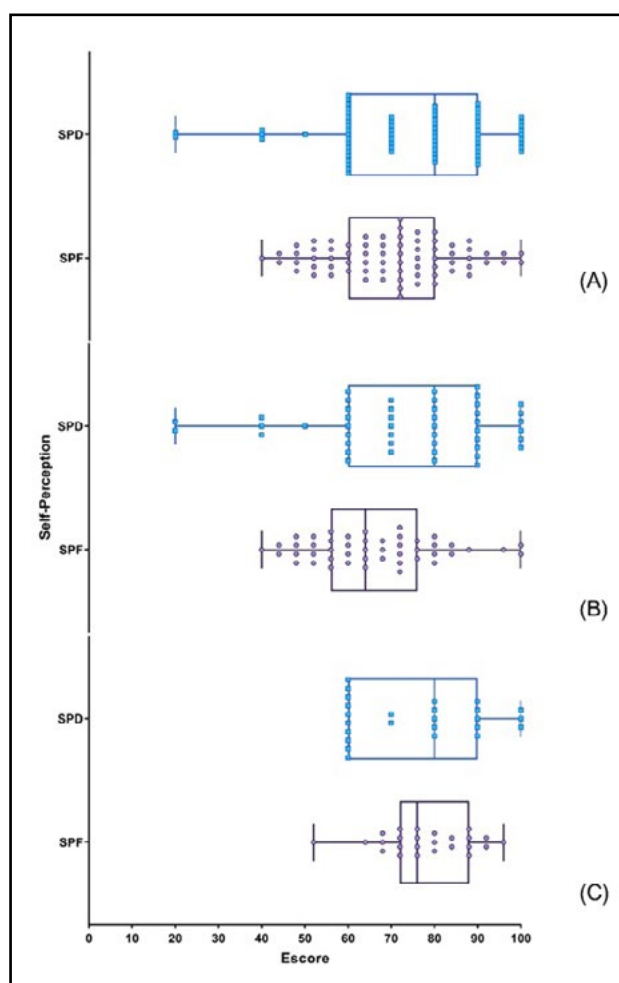
	Men (n= 25)		Women (n= 47)		<i>t Student independent</i>	
	Mean	Stardand deviation	Mean	Stardand deviation	<i>t-value</i>	p
Daily time spent cycling (min)	49.40	67.23	23.87	24.08	-2.352	0.020
Work Index (a.u)	2.72	0.41	2.57	0.51	-1.191	0.248
Sport Index (a.u)	3.34	0.76	3.03	0.83	-1.541	0.137
Leisure Index (a.u)	14.43	16.93	8.02	6.16	-2.337	0.028
Total score (a.u)	20.49	16.93	13.63	6.31	-2.480	0.026

* Total score = Work Index + Sports Index + Leisure Index

Table 3. Correlation of self-perceived physical effort and physical fitness indices and the results of physical tests and indices of the Habitual Physical Activity Questionnaire

Variáveis	Self-perception index of physical demand			Self-perception index of physical fitness		
	Pearson's r	p-value	Effect size (Fisher's z)	Pearson's r	p-value	Effect size (Fisher's z)
Push-up test (reps)	-0.278	0.018	-0.286	0.525	<0.001	0.583
Abdominal test (reps)	-0.172	0.149	-0.174	0.503	<0.001	0.553
VO2máx (mL.kg ⁻¹ .min ⁻¹)	-0.259	0.028	-0.265	0.695	<0.001	0.858
BMI (kg.m ⁻²)	0.052	0.664	0.052	-0.107	0.370	-0.108
Daily time spent cycling (min)	0.115	0.336	0.115	0.142	0.234	0.143
Work Index (a.u)	-0.021	0.863	-0.021	0.117	0.327	0.118
Sport Index (a.u)	-0.284	0.016	-0.292	0.439	<0.001	0.472
Leisure Index (a.u)	0.105	0.379	0.106	0.157	0.188	0.158
Total Score (a.u)	0.083	0.487	0.083	0.191	0.108	0.194

Figure 1



Discussion

This study investigated self-perceptions of physical demands and fitness among volunteers in the Brazilian Air Force Reserve Officer Training Course. It correlated these perceptions with performance in physical tests and the level of habitual physical activity. The analysis of these self-perceptions in the context of military training provides insight into the high demands of the TAI. While the use of self-reported tools (e.g., RPE) is established in occupational demand literature, this study contributes by applying these perceptions to assess the *mismatch* between perceived demand and perceived capacity in FAB officer training, which can inform future PES development. While the existing literature focuses on objective assessment, this research aimed to contrast subjective perception with objective data on performance and physical activity.

The results of the physical tests revealed significant differences between the sexes, with men exhibiting higher values, which is consistent with previous findings.^{29,30} The mean age and BMI did not differ significantly between the groups, indicating homogeneity in lifestyle behaviours such as nutrition and body composition, thus minimising the potential for confounding variables.

Regarding habitual physical activity, approximately 81% of the aspirants reported engaging in physical exercise for at least 60 minutes, three times a week (88% among men and 77% among women), a result that aligns with findings from studies on military personnel.³¹⁻³³ Additionally, when compared to female participants, men in our study reported practising more physical activity in relation to daily cycling time, leisure indices and total score, supporting findings from other studies.^{34,35}

Figure 2

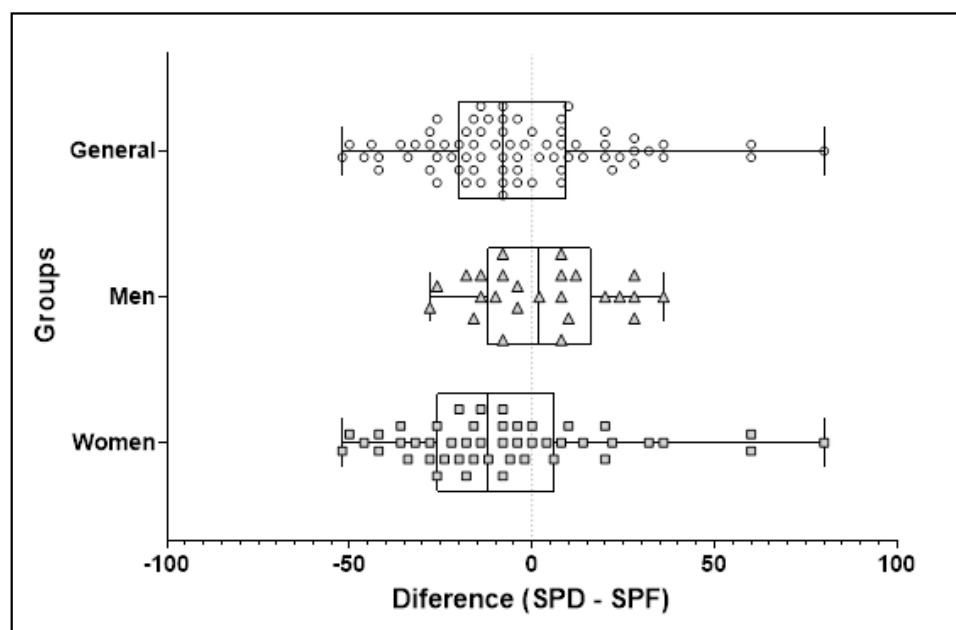


Table 4. Comparison of anthropometric, physical fitness, and activity variables across perceived physical reserve index (PPRI) groups

	Negative n=39	Neutral n=9	Positive n=24	F	p
Age (year)	34.7 ± 4.2	34.6 ± 4.6	34.6 ± 4.0	0.004	1.00
Body mass (kg)	72.0 ± 11.7	69.1 ± 11.0	71.9 ± 10.1	0.25	0.78
Stature (cm)	168.6 ± 8.3	168.0 ± 7.6	169.3 ± 7.7	0.10	0.91
BMI (kg·m ⁻²)	25.2 ± 3.0	24.7 ± 4.6	25.0 ± 10.2	0.15	0.86
Push-up test (reps)	24.8* ± 9.0	27.6 ± 9.5	37.0* ± 10.2	12.46	<0.001
Abdominal test (reps)	36.1* ± 8.9	41.3 ± 9.2	45.7* ± 11.4	7.09	<0.001
VO ₂ máx (mL·kg ⁻¹ ·min ⁻¹)	33.5*# ± 5.6	38.5# ± 5.9	42.2* ± 6.1	16.98	<0.001
Daily time spent cycling (min)	2.6 ± 0.6	2.5 ± 0.2	2.7 ± 0.4	0.34	0.71
Work Index (a.u)	2.9* ± 0.7	3.1 ± 0.9	3.5* ± 0.8	4.24	0.02
Sport Index (a.u)	10.4 ± 12.8	9.4 ± 4.1	10.3 ± 11.4	0.03	0.97
Leisure Index (a.u)	16.0 ± 12.9	15.0 ± 4.3	16.4 ± 11.4	0.05	0.95

Note: * denotes significant difference ($p < 0.05$) from Negative group. # denotes significant difference ($p < 0.05$) from Neutral group.

The correlation between physical tests, habitual physical activity levels and self-perceptions revealed noteworthy findings.³⁶ A negative and significant correlation was observed between the self-perceived physical demand index and performance in tests (push-ups, sit-ups, VO₂max), as well as the sports index. Greater physical fitness/capacity is associated with lower physical and/or physiological strain during tasks with fixed demands than in individuals with lower fitness/capacity. Studies on military populations support this.^{17,37,38} This suggests that better physical performance is associated with a lower perception of effort.^{39,40} In contrast, self-perceived

physical fitness showed a positive correlation with test performance, indicating that individuals with higher self-perceived fitness tend to achieve better results. These largely intuitive findings reinforce the idea that more trained individuals perceive less effort for the same task and demonstrate better performance in physical tests. The correlations found support the significance of self-perceptions, despite their subjective nature, aligning with studies on the subjective perception of effort in various contexts and its potential utility as a monitoring tool in military training.⁴¹ Indeed, subjective self-reported measures have proven to be robust tools

for monitoring training load and readiness in both athletic and tactical populations. The literature on using self-perceptions to monitor exercise intensity presents divergent results.^{21,42-44}

To analyse the relationship between perceptions of physical demand and individual capacity, the difference between self-perceptions of physical demand and self-perceptions of physical fitness was calculated, yielding the PPRI. Analysis of this index revealed that the majority of military personnel in the total group, particularly women, had a negative PPRI, indicating that the perception of physical demand exceeds the perception of physical fitness required to carry out military tasks. This deficit condition may, in the long term, increase the risk of injuries and course dropout. This study's contribution extends beyond merely confirming the importance of fitness. We specifically quantify a perceived mismatch between TAI demands and the entry-level capacity of volunteers, identified via the negative PPRI. This finding pinpoints a critical friction point in the training pipeline where demand may exceed capacity, thereby increasing injury risk and attrition. The definition of PES must, therefore, be based on tests that are valid predictors of occupational task performance. In this regard, studies such as Reilly et al.⁴⁵ highlight the importance of developing and applying PFTs with reduced sex bias. The authors demonstrate that the choice of tests can significantly influence the fairness of the standards, suggesting that PFTs with greater performance overlap between sexes can facilitate the creation of more equitable and accurate PES. Our research, by focusing on physical fitness, contributes to this discussion by providing data to assess physical components relevant to military task performance, particularly given differences in perceived demand between sexes. In contrast, men showed no difference between physical demand and general physical fitness.

The analysis of PPRI in relation to physical tests and habitual physical activity level demonstrated that groups with different PPRI did not show significant differences in age groups or in activity indexes (work, leisure, and total), suggesting that these variables did not influence the PPRI classification. However, all physical tests showed significant differences between PPRI groups. A positive PPRI was associated with higher scores on physical tests, with a statistically significant difference compared to the neutral and negative groups. In addition to the relationship with the risk of dropping out of courses and injuries, some studies suggest that high levels of physical fitness are associated with greater performance at work.^{46,47} However, it is important to note that improving physical fitness does not necessarily lead

improvements in cognitive and emotional aspects.⁴⁶ The study by Brooks and Greenberg suggests that, to protect wellbeing and enhance performance, military organisations should also prioritise strengthening relationships between employees and their supervisors/peers.⁴⁸

Our finding that the TAI is perceived as 'very demanding' by 65% of the sample aligns with the broader literature on military initial training, which consistently reports high physical, physiological and psychological loads during basic and officer training programs internationally.

The observation that individuals with higher self-perceived physical fitness found the physical demands easier is a valuable insight. This suggests that self-perceived physical fitness, likely *reflecting* objective fitness, aligns with perceived demand. Objectively, fitter individuals experience less relative physiological strain for a given absolute task, which, in turn, results in a lower perception of effort.

Practical implications

The findings of this study offer actionable insights for the FAB. The identification of a negative PPRI (discussed below), which was particularly pronounced among female volunteers, suggests a significant mismatch between the perceived demands of the TAI and the self-perceived physical capacity of some incoming personnel. This mismatch is a known risk factor for musculoskeletal injury and course attrition.

Therefore, we suggest that the FAB consider implementing or recommending pre-conditioning programs for volunteers prior to the TAI. Such an intervention, targeting candidates (of both sexes) with lower self-reported or objective fitness levels, could help mitigate these risks, improve adaptation to training and ultimately increase course completion rates.

This study has limitations. Beyond the sample size and subjective nature of the instruments, the cross-sectional design prevented us from correlating initial fitness and the PPRI with objective course outcomes (i.e., completion vs attrition). A future longitudinal study to validate the predictive power of these measures is a necessary next step. However, it is believed that the methodology can be refined and used in future research as a potential tool for establishing the PES. Future research should also incorporate the cognitive and psychological aspects of work environments into the PES structure to provide a more holistic understanding.

Conclusion

This initial study evaluating self-perceptions in the context of the FAB TAI demonstrated the relevance of subjective perceptions to physical demand and physical fitness, and their associations with objective measures of physical performance and habitual physical activity. The results suggest that perceptions of demand can influence how volunteers experience training, while the self-perceptions of physical fitness align with actual physical performance. The identification of a predominantly negative PPRI in the sample, especially among women, may have implications for injury risk and adaptation to the course, reinforcing the importance of considering self-perceptions in planning military training. Specifically, this study informs future PES

development by: 1) justifying the need for a minimum entry standard, given the high perceived demand of the TAI; 2) identifying the key fitness components (aerobic and muscular) that are correlated with lower perceived demand; and 3) highlighting a high-risk group (those with a negative PPRI) whom a PES should aim to screen for or identify for pre-conditioning.

Corresponding Author: Vinicius Damasceno, viniciusvod@fab.mil.br

Authors: V Damasceno¹, G B Fanaro², A Rosado, I Santos, G van Keulen¹, H G Resende¹

Author Affiliations:

1 Universidade da Força Aérea

2 University of the Air Force

References

1. Brasil. Comando da Aeronáutica. Currículo mínimo da 1ª fase do Estágio de Adaptação Técnico. ICA 37-393. Brasília, DF: Comando da Aeronáutica, 2015. Available from: <https://www.sislaer.fab.mil.br/terminalcendoc/Busca/Download?codigoArquivo=8382>
2. Drain JR, Reilly TJ. Physical employment standards, physical training and musculoskeletal injury in physically demanding occupations. *Work*. 2019;63(4):495-508.
3. Petersen SR, Anderson GS. The Second International Conference on Physical Employment Standards: An international perspective. *Appl Physiol Nutr Metab*. 2016 Jun;41(6 Suppl 2):iii-iv.
4. Petersen SR, Anderson GS, Tipton MJ, et al. Towards best practice in physical and physiological employment standards. *Appl Physiol Nutr Metab*. 2016 Jun;41(6 Suppl 2):S47-62.
5. Bakker AB, Demerouti E. The job demands-resources model: state of the art. *J Manag Psychol*. 2007;22(3):309-28.
6. Bakker AB, Demerouti E, Sanz-Vergel A. Job demands-resources theory: Ten years later. *Annu Rev Organ Psychol Organ Behav* [Internet]. 2023 Jan [cited 2025 May 7];10:25-53. Available from: <https://www.annualreviews.org/doi/10.1146/annurev-orgpsych-120920-053933>
7. Roberts D, Gebhardt DL, Gaskill SE, et al. Current considerations related to physiological differences between the sexes and physical employment standards. *Appl Physiol Nutr Metab*. 2016 Jun;41(6 Suppl 2):S108-20.
8. Greeves JP. Physiological implications, performance assessment and risk mitigation strategies of women in combat-centric occupations. *J Strength Cond Res*. 2015 Nov;29 Suppl 11:S94-100.
9. Sean R, Maria CL, Carra SS, et al. Fit for duty?: Evaluating the physical fitness requirements of battlefield airmen. *Rand Health Q*. 2018 Jan 29;7(2):8.
10. Brasil. Comando da Aeronáutica. NSCA 54-5 – Treinamento físico-profissional militar no Comando da Aeronáutica [Internet]. Brasília, DF: Comissão de Desporto da Aeronáutica; 2020 [cited 2025 May 7]. Available from: <https://www.sislaer.fab.mil.br/terminalcendoc/Acervo/Detalhe/5479?a=1&guid=1615680006581>
11. Brasil. Exército Brasileiro. EB70-MC-10.375 - Manual de Campanha – Treinamento Físico Militar. Brasília, DF: Comando de Operações Terrestres; 2021. Available from: <https://bdex.eb.mil.br/jspui/bitstream/123456789/9759/1/EB7010.375%20Treinamento%20F%C3%ADsico%20Militar.pdf>
12. Brasil. Marinha do Brasil. CGCFN-15 - Normas sobre treinamento físico militar e Testes de avaliação física na Marinha do Brasil. Brasília, DF: Comando-Geral do Corpo de Fuzileiros Navais, 2021. Available from: <https://pt.slideshare.net/slideshow/cgcfn15-normas-sobre-treinamento-fsico-militar-teste-de-avaliacao-fsica-e-teste-de-suficiencia-fsica-na-marinha-do-brasil/250863516>
13. Bell NS, Greene JM, Baezconde-Garbanati L, et al. High injury rates among female army trainees: a function of gender? *Am J Prev Med*. 2000;18(3 Suppl):141-6.

14. Knapik JJ, Sharp MA, Canham-Chervak M, et al. Risk factors for training-related injuries among men and women in basic combat training. *Med Sci Sports Exerc.* 2001 Jun;33(6):946-54.
15. Nindl BC, Leone CD, Tharion WJ, et al. Physical performance responses during 72 h of military operational stress. *Med Sci Sports Exerc.* 2002 Nov;34(11):1814-22.
16. Haskell WL, Lee IM, Pate RR, et al. Physical activity and public health: updated recommendation for adults from the American College of Sports Medicine and the American Heart Association. *Med Sci Sports Exerc.* 2007 Aug;39(8):1423-34.
17. Blacker SD, Griffiths RD, Nindl BC, et al. Risk factors for training injuries among British Army recruits. *Mil Med.* 2008;173(3):278-86.
18. Bulzacchelli MT, Sulsky SI, Rodriguez-Monguio R, et al. Injury during U.S. Army basic combat training: a systematic review of risk factor studies. *Am J Prev Med.* 2014 Dec;47(6):813-22.
19. Koltun KJ, Bird MB, Forse JN, et al. Physiological biomarker monitoring during arduous military training: Maintaining readiness and performance. *J Sci Med Sport.* 2023 Jun;26 Suppl 1:S64-S70.
20. Friedl KE. Military applications of soldier physiological monitoring. *J Sci Med Sport.* 2018 Nov;21(11):1147-53.
21. Scherr J, Wolfarth B, Christle JW, et al. Associations between Borg's rating of perceived exertion and physiological measures of exercise intensity. *Eur J Appl Physiol.* 2013 Jan;113(1):147-55.
22. Raabe J, Zakrajsek RA, Orme JG, et al. Perceived cadre behavior, basic psychological need satisfaction, and motivation of US Army ROTC cadets: A self-determination theory perspective. *Mil Psychol.* 2020 Sep 4;32(5):398-409.
23. Ryan RM., Deci EL. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist.* 2000 55(1): 68-78.
24. Bates MJ, Bowles S, Hammermeister J, et al. Psychological fitness, *Mil Med.* 2010 Aug; 175(8): 21-38.
25. Thomas JR, Martin PE, Etnier JL, et al. Research methods in physical activity. 8th ed. Champaign: Human Kinetics; 2023.
26. Brasil. Ministério da Defesa. Comando da Aeronáutica. Aplicação do teste de avaliação do condicionamento físico para exames de admissão, seleção e aviso de convocação do Comando da Aeronáutica. NSCA 54-4. Brasília: Comando da Aeronáutica, 2023.
27. Sardinha A, Levitan MN, Lopes FL, et al. Tradução e adaptação transcultural do Questionário de Atividade Física Habitual. *Rev Psiq Clín.* 2010;37(1):16-22.
28. Ainsworth BE, Haskell WL, Whitt MC, et al. Compendium of physical activities: an update of activity codes and MET intensities. *Med Sci Sports Exerc.* 2000 Sep;32(9 Suppl):S498-504.
29. Pereira EF, Teixeira CS. Proposta de valores normativos para avaliação da aptidão física em militares da Aeronáutica. *Rev Bras. Educ. Fis. Esp.* 2006 out/dez;20(4):249-56.
30. Nunes AV, Miarka B, Campos FAD, et al. Comparação entre modelos de testes físicos em função da massa corporal e sexo: um estudo com alunos da academia de polícia civil do estado do rio grande do sul. *Conexões.* 2010 Aug;8(2):33-46.
31. Grabara M, Sadowska-Krępa E. Musculoskeletal disorders and the physical activity of territorial army soldiers during the COVID-19 pandemic. *BMC Musculoskelet Disord.* 2021 Sep 16;22(1):796.
32. Webber BJ, Bornstein DB, Deuster PA, et al. BMI and Physical Activity, Military-Aged U.S. Population 2015-2020. *Am J Prev Med.* 2023 Jan;64(1):66-75.
33. Tomczak A, Anyżewska A, Lepionka T, et al. Physical activity and eating habits of polish navy soldiers and border guard officers-a comparative analysis. *Nutrients.* 2024 Nov 9;16(22):3842.
34. Santos Júnior R, Argolo Júnior C. Barreiras para a prática de atividade física em policiais militares do estado de Alagoas. *Cadernos de Graduação – Ciências Biológicas e da Saúde.* 2016 Mar;3(2):217-238.
35. Oliveira CC. Nível de atividade física em policiais militares: fatores preditores e protocolo de intervenção de enfermagem [Tese]. Salvador: Universidade Federal da Bahia, Escola de Enfermagem, Programa de Pós-Graduação em Enfermagem e Saúde; 2023. 152 p.
36. Rynders CA, Angadi SS, Weltman NY, et al. Oxygen uptake and ratings of perceived exertion at the lactate threshold and maximal fat oxidation rate in untrained adults. *Eur J Appl Physiol.* 2011 Sep;111(9):2063-8.

37. Conkright WR, O'Leary TJ, Wardle SL, et al. Sex differences in the physical performance, physiological, and psycho-cognitive responses to military operational stress. *Eur J Sport Sci*. 2022; 22(1), 99-111.
38. Blacker SD, Wilkinson DM, Rayson MP. Gender differences in the physical demands of British Army recruit training. *Mil Med*. 2009; 174(8), 811-816.
39. Saw AE, Main LC, Gastin PB. Monitoring the athlete training response: subjective self-reported measures trump commonly used objective measures: a systematic review. *British Journal of Sports Medicine*. 2016; 50(5), 281-291.
40. Michael SW, Siddall AG, O'Leary TJ et al. Monitoring work and training load in military settings—what's in the toolbox?. *European Journal of Sport Science*. 2022; 22(1), 58-71.
41. Gibson N, Drain JR., Larsen P, et al. Subjective measures of workload and sleep in Australian Army recruits; Potential utility as monitoring tools. *Mil Med*. 2023; 188(3-4), 670-677.
42. Demello JJ, Cureton KJ, Boineau RE, et al. Ratings of perceived exertion at the lactate threshold in trained and untrained men and women. *Med Sci Sports Exerc*. 1987 Aug;19(4):354-62.
43. Held T, Marti B. Substantial influence of level of endurance capacity on the association of perceived exertion with blood lactate accumulation. *Int J Sports Med*. 1999 Jan;20(1):34-9.
44. Abe D, Yoshida T, Ueoka H, et al. Relationship between perceived exertion and blood lactate concentrations during incremental running test in young females. *BMC Sports Sci Med Rehabil*. 2015 Jan 22;7:5.
45. Reilly TJ, Sharp MA, Cao M, et al. A database of predictor test sex bias for development of military physical employment standards. *Work*. 2019;63(4), 591-601.
46. Wood J, Oh J, Park J, et al. The relationship between work engagement and work-life balance in organizations: A review of the empirical research. *Hum Resour Devel Rev*. 2020;1-23. Available from: <https://doi.org/10.1177/1534484320917560>
47. Dalimunthe IK, Chondro F. Concentration with fitness leads to more work productivity. *J Biomed Health*. 2022;5(3):171-81. DOI: 10.18051/JBiomedKes.2022.v5.171-181. Available from: <https://www.jbiomedkes.org/index.php/jbk/article/view/272>.
48. Brooks SK, Greenberg N. Non-deployment factors affecting psychological wellbeing in military personnel: literature review. *J Ment Health*. 2018 Feb;27(1):80-90



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Treating and Managing SW&I

M J Davies

Abstract

This paper proposes a SW&I Spiritual Health Protocol-Provisional (SW&ISH-P) that will expand on the spiritual aspects of the treatment and management of Spiritual Wounds and Injuries (SW&I) previously discussed in this journal.¹ It is set against the fundamental principle that the SW&I is likely to occur within a broader injury context and, as such, must be delivered as part of a bio-psycho-social-spiritual approach within a continuum of care, from screening to treatment.²

The protocol will firstly define a form of SW&I handover between Defence and the Department of Veterans Affairs (DVA). Following this, it will explore options for well-developed, validated and monitored care. This will include a review of existing spiritual and other approaches to spiritual health care. There will also be an examination of the purpose of treating SW&I, and a discussion of how such spiritual and religious activity sits within a secular state. Finally, and based on the assumption that each of these approaches has utility and value, they will be set in a broader management protocol proposed for the appropriate and directed care of SW&I. The SW&ISH-P is provisional; although it is based on research to date, it will require further development that is outside the scope of this paper. This will include confirming the steps identified to date and developing a more comprehensive set of treatment and management approaches. Commentary and advice from readers will be most welcome.

Introduction

In a previous paper in this journal, a soldier was lying on a table, surrounded by several practitioners.¹ Each practitioner would be highly skilled in their field and would undoubtedly take every step to restore that soldier to fighting condition, so they could return to battle or to service in general. Unfortunately, that may not be fully possible, and the soldier may have to be medically discharged. Of course, it may not be quite so dramatic. At some point in their journey, the soldier may reach a point when professional, family or other issues lead them to transition to a Reserve role voluntarily or leave the Service completely. In both cases, the Department of Veterans Affairs (DVA) takes over their care, predominantly utilising civilian commercial firms and organisations.

What of the case of a soldier who wondered whether God still loved him as he 'had to' shoot two insurgents who were about to attack his position?³ He is possibly suffering from a Spiritual Wound and Injury (SW&I). This condition can be helped, in part, by complementary disciplines such as psychology or psychiatry. However, ultimately, the treatment will also require the professional skill and training of a Religious/Spiritual Practitioner (RSP). There are several aspects to meeting this soldier's needs. The first is a handover between Defence and DVA. In the case of a soldier with a medical or psychological condition, aspects of the individual's case history and medical notes are shared between the two agencies. This does not occur with their spiritual

history or circumstances. The second is the delivery of well-developed, validated and monitored care. Finally, there is the management of appropriate, directed care for their SW&I. In some cases, this does occur, but it is at best ad hoc and driven mainly by the veteran. The process lacks a body of accepted treatment methodologies, management or support from the DVA, or any formalised support from any of the major faith groups.

Aim

This paper proposes a SW&I Spiritual Health Protocol-Provisional (SW&ISH-P) for the treatment of SW&I. In particular, the paper aims to develop a provisional working model of a process that can be applied by RSP and supporting healthcare professionals.

Methodology. The paper is based on the management of spiritual damage as part of a holistic bio-psycho-social-spiritual approach within a continuum of care, from screening to treatment.² Initially, it is important to discuss where the treatment of SW&I sits within a modern, western and secular state such as Australia. From this position, the paper will build the protocol in three steps. The first step will be to discuss the SW&I handover between Defence and DVA. The second is to explore options for well-developed, validated and monitored care. This will entail reviewing existing spiritual and other approaches to spiritual health care. Finally, and assuming each of these approaches has utility and value, they will be

integrated into a broader management protocol that establishes a vision for the appropriate and directed care of SW&I.

Limitation. The SW&IA-P is provisional; although it is based on research to date, it will require further development that is outside the scope of this paper. This will include confirming the processes identified to date and developing a more comprehensive set of treatment and management approaches. It is anticipated that pilot activity will also be necessary to validate this model, although this requires further analysis outside the scope of the paper.

Spiritual care in a secular state

There is an argument that a modern, democratic, and secular state such as Australia should not seek or accept a role in the spiritual care, treatment and management of serving Defence personnel and veterans. Many countries, such as Australia, subscribe to the concept of the separation of church and state. This concept is often credited to the writings of the English philosopher John Locke (1632–1704), with the term itself taken from Thomas Jefferson's (1743–1826) writings on a wall of separation between church and state.^{4,5} It is essentially a philosophical and jurisprudential concept that argues for political distance between religious organisations and the executive and bureaucratic organs of a nation-state. In Australia, this concept is supported by the Constitution (Section 116), which directs that the 'Commonwealth shall not make any law for establishing any religion, or for imposing any religious observance, or for prohibiting the free exercise of any religion...'⁶

There is, however, one compelling argument why a secular state such as Australia should not only seek, but wholeheartedly accept a role in the spiritual care, treatment and management of serving Defence personnel and veterans. This argument is based on the concept of restoration. Restoration is the act of restoring something to a person who has previously been deprived of it; it is the return of something lost or stolen.⁷ Imagine if the soldier on the stretcher had suffered from a badly broken leg. Treating this is a medical procedure, and the doctors would have followed a well-practised, standard protocol for resetting the bone. The soldier would then have been evacuated to a field or general hospital for recovery. During this period, medical staff would have helped the soldier restore their leg to its former state.

Most militaries go to extraordinary lengths to care for injured soldiers. Some of this is to preserve the morale of the overall group by demonstrating that they will be cared for if they are wounded or injured

while placing themselves in danger. Pragmatically, the bigger concern is personnel management and maintaining the unit or organisation's capability to fight. Ultimately, Defence medical and healthcare services aim to return injured personnel to a fighting state as soon as possible. As the ADF Health Strategy notes, the Defence Health System, in collaboration with health industry and academic partners, will be critical to ensuring the ADF's health capability is ready to meet these emerging challenges.⁸ There is no presumption that individuals will be better/stronger/faster than before treatment or that purely cosmetic issues will be managed.

Once the soldier leaves the service, any future care passes to DVA, whose role will be to support the physical wellbeing and quality of life of eligible persons and their dependents through health and other care services that promote early intervention, prevention, and treatment, including advice and information on health service entitlements.⁹ DVA assumes responsibility for the restoration or ongoing care of the soldier's leg without any presumption of improving or enhancing the veteran's capabilities beyond their initial state.

Defence has long recognised that spirituality is part of some soldiers' lives and that this needs to be supported. For example, the Royal Australian Army Chaplains' Department personnel have served on every deployment since WWI and today have over 100 military Chaplains. Their role is to provide spiritual, religious, and pastoral support to all ADF personnel and their families in a range of peacetime and operational environments. Additionally, they provide timely, accurate and relevant advice to Commanders and staff on matters relating to spiritual, religious and pastoral wellbeing, personal morality, ethics, character formation and morale.¹⁰

In the event of a SW&I while serving, the role of the Defence Chaplain will be to treat or manage the individual to return them to duty. Uniquely, Defence Chaplains offer ecumenical support, representing their respective faiths while providing spiritual guidance to members of any faith, as well as to agnostics and atheists. Defence Chaplains do not seek to convert, evangelise, proselytise or foster their specific faith or religion in general.

Following evidence given before the Royal Commission into Defence and Veteran Suicide, DVA recently recognised the important role that chaplains can play in suicide prevention and care. A pilot program was launched to support veterans and families undergoing complex or challenging transitions from ADF Service. The program sought

to utilise serving and transitioned ADF Chaplains to provide this care, as they are familiar with veterans' and their families' experiences and the context of military life.¹¹ The SW&I concept is new, but it is not an overdiagnosis of existing conditions as an arbitrary step to distinguish it from moral injury (MI) or PTSD or to establish some form of religious or spiritual agenda. The critical point that the volume of scholarship makes clear is that traumatic events significantly affect an individual's spirituality.

There is no suggestion that Governments have a role in fostering the growth and spread of religion. This is about managing injury and damage that has occurred while individuals were serving their nations. These injuries are multidisciplinary and cross medical, moral and spiritual borders.

SW&I – Spiritual health care approaches

Typical approaches to SW&I care are detailed in the World Health Organization's (WHO) International Classification of Diseases (ICD) under the heading of pastoral care. This provides a good basis for the treatment and management of SW&I. It notes:

*'An expression of pastoral care that includes personal or familial counsel, ethical consultation, a facilitative review of one's spiritual journey and support in matters of religious belief or practice. The intervention expresses a level of service that may include counselling and catechesis for example, and the following elements may be identified:—emotional/spiritual counsel, ethical consultation, religious counsel/catechesis, spiritual review, death and dying pastoral ritual/worship. This intervention contains the pastoral expressions of informal prayer and ritual for individuals or small groups, and the public and more formal expressions of worship, including Eucharist and other services, for faith communities and others. Elements of this intervention may include: (a) private prayer and devotion, bedside Communion and Anointing services, and other sacramental and ritual expressions; (b) public ministry—Eucharist/Ministry of the Word, funerals, memorials, seasonal and occasional services.'*¹²

Ultimately, spiritual, medical and healthcare efforts aim to restore injured personnel to fighting capability and, as a secondary goal, to a life as close as possible to their previous state. Practitioners in these fields may also aim to build physical and mental resilience, enabling individuals who may be exposed to the same conditions again to cope better and survive.

The order and sequence are important here. Individuals who have a mental illness may be vulnerable and easily swayed towards a particular approach. From a medical perspective, this may lead veterans to seek alternative opinions for subsequent treatment of their conditions. Sadly, not all practitioners offering such options may be helpful. The same applies to an SW&I. An SW&I is not an easy pathway to evangelism or proselytisation, despite an RSP's calling, mission or zeal. The first order of business is to address the SW&I at hand and to seek to return the individual to a religious and spiritual schema as close as possible to the pre-event or incident state.

As a secondary goal, there may be an opportunity to deepen the individual's faith or religious understanding, helping them build spiritual resilience to cope with the same conditions if faced again. If an individual then chooses a more fulsome spiritual path and a closer relationship with God, that is wonderful. Still, it is not the aim of SW&I management, nor is this something a government-based and publicly funded veteran's administration is responsible for doing. The cut-off point for management and treatment of a SW&I should be restoration.

Noting the preceding discussion, a structure such as the SW&IAT-P is important for three reasons:

1. **Foundational.** The proposed SW&IAT is a multifaith tool and is not based on or subject to any religious doctrine, dogma or belief. It seeks to establish a common language for managing SW&I across religious groups and for supporting secular discipline. The focus is squarely on the overall structure for managing treatment, not on the treatment itself, whether secular or religious.
2. **Descriptive.** After a medical or psychological practitioner assesses a client or patient, they will develop a written management or treatment plan. The RSP also needs to develop similar plans. In doing this, the RSP provides documentation of their approach, which may be necessary for later treatment issues, including the handover of the patient between treating professionals. It is unlikely that this will be a purely sequential approach, but at various points, one of the disciplines will need to lead the treatment regime for a period. Accordingly, a seamless handover between practitioners will be essential, while maintaining the confidentiality protocols inherent in each discipline.
3. **Platform.** The SW&IAT-P also serves as a platform for the integrated use of the treatment methodologies discussed below.

Moral injury management tools

It is important to note that effects on spirituality following a traumatic event are currently looked at through an MI lens. This paper argues that such events should be examined on a separate scale, although spiritual treatments in an MI setting will be considered under the heading 'spirituality.' Likewise, only MI treatments that may be useful, even if they address spiritual issues, will be considered for review. Several treatment and management approaches can be considered. Many MI treatment and management tools exist in mental health, in particular, PTSD tools. Again, this is hardly surprising given MI's roots in PTSD and its strong scientific focus. It does, however, tend to restrict the use of the tools to appropriately trained medical and psychological personnel. These tools are summarised in Annex A. The American Psychological Association strongly recommends three PTSD treatment tools.¹³ These tools also have utility for MI treatment and may be considered for use in the management of SW&I.

Cognitive Processing Therapy (CPT). One of psychology's most fundamental, empirically validated treatment tools, CPT promotes recovery from PTSD by directly modifying maladaptive cognitions developed following the traumatic event.¹⁴ These maladaptive cognitions can include incorrect interpretations of the event that lead to self-blame or distorted views of the self or the world (e.g., 'nobody can be trusted'). Maladaptive cognitions are repeatedly challenged through cognitive restructuring techniques to help individuals develop more balanced and healthy appraisals of the traumatic event, themselves and the world around them.¹⁵ CPT is a specific type of cognitive behaviour therapy that helps patients learn how to modify and challenge unhelpful beliefs related to the trauma.¹⁶

Cognitive Behaviour Therapy (CBT). CBT focuses on the relationship among thoughts, feelings and behaviours; targets current problems and symptoms; and aims to change patterns of behaviours, thoughts and feelings that lead to difficulties in functioning. CBT is typically delivered over 12 to 16 sessions, in either an individual or group format.¹³

Developed as a PTSD tool, CBT can be used in treating patients diagnosed as suffering from MI.¹⁷ Psychologists will employ a range of techniques to help patients alleviate symptoms and enhance their functioning. This may include psychoeducation and other interventions to help patients understand their condition and to normalise their symptoms and experiences during the traumas. Specifically, with MI,

practitioners will explain and normalise the patient's experiences and the range of emotional reactions that people have during and after a morally injurious event. This will be linked to steps that rebuild the individual's life by reclaiming previously valued and enjoyed activities after a trauma. Intrusive memories will be assessed through imaginal reliving or written narratives of the trauma memory. This may lead to a less threatening perspective on the event by providing information previously unavailable to the patient.¹⁷

Prolonged Exposure (PE). Exposure is a commonly used intervention strategy that helps individuals confront their fears. PE is a specific type of CBT that teaches individuals to approach trauma-related memories, feelings and situations gradually.¹⁸ Additionally, a case report by Wyatt Evans et al. notes that PE can successfully treat moral injury-based PTSD.¹⁹ The report describes the facilitation of moral healing for a US Army soldier with combat-related PTSD in a 3-week intensive outpatient PE program. While PTSD symptoms were reduced from pre- to post-treatment, even more substantial treatment gains were observed in the soldier's functional changes, engagement with values-based activities and reported willingness to embrace moral pain.¹⁹

PE is typically delivered in 8–15 weekly individual sessions over about 3 months. Imaginal exposure occurs in session, with the patient describing the event in detail in the present tense, guided by the therapist. Together, the patient and therapist discuss and process the emotion raised by the imaginal exposure in the session. The patient is recorded while describing the event, allowing them to listen to the recording between sessions to process their emotions further and practice breathing techniques. In vivo exposure, confronting feared stimuli outside of therapy, is assigned as homework. The therapist and patient together identify a range of possible stimuli and situations connected to the traumatic fear, such as specific places or people.²⁰

Spiritual management tools

If an individual is assessed as suffering a SW&I by using an assessment tool such as SW&IAT-P, then many potential techniques that have a spiritual/faith/religious approach can be used. These fit into two broad categories. The first are very similar to secular tools, although they can be applied in a multifaith environment. The scope of these assessments is described in Annex A, with three notable tools highlighted below.

Multifaith tools. In many cases, these are modifications of existing approaches. Examples of this include Spiritually Integrated CPT (SICPT) and Religiously Integrated Cognitive Behaviour Therapy (RCBT). As their roots lie in the base psychological tools, for example, CPT and CBT, their use is restricted to trained psychologists or psychiatrists, albeit ones with a degree of spiritual and religious understanding or background. Three multifaith tools of note include:

Spiritually Integrated CPT (SICPT). CPT has been further developed to integrate aspects of clients' spiritual beliefs, practices, values and motivations. Spiritually Integrated CPT (SICPT) utilises spiritual concepts and rituals, including compassion, grace, spiritually guided imagery, repentance, confession, forgiveness, atonement, blessing, restitution and making amends.¹⁴ The team that developed SICPT included:

Clinical psychologist, an active-duty military psychologist, a psychiatrist, and a VA (US DVA) Chaplain, all with expertise in designing and/or researching spiritually integrated treatments aimed to produce an empirically validated treatment for PTSD, to incorporate clients' spiritual beliefs, practices, values and motivations.¹⁴

Structured Pastoral Care (SPC). SPC is based on David Benner's concepts of therapeutic counselling in a Christian context with narrowly focused goals in a time-limited setting.²¹ SPC is also known as a Structured Chaplain Intervention (SCI) and is a tool designed to treat MI among veterans with significant PTSD symptoms.²² It is a 6- to 12-week, one-on-one treatment delivered in 12 50-minute sessions. SPC is a religion-specific intervention with Christian, Jewish, Muslim, Buddhist and Hindu versions. It utilises the original scriptures in each of these five major religious traditions to address the major symptoms of MI. A limited study found that SPC delivered by chaplains is effective in reducing MI symptoms, but also improving PTSD symptoms as well.²²

Pastoral Narrative Disclosure (PND). PND is presented as an MI treatment that addresses a complex trauma-related syndrome involving a correlation of biological, psychological, social and spiritual symptoms that can have a substantial impact on health and wellbeing.² With this tool, treating professionals seek to use the sacrament of penance to acknowledge the moral pain veterans experience after returning from combat. PND was designed for mental health-trained clergy and

Clinical Pastoral Education-trained healthcare and military chaplains. It is based on an eight-step process that includes spiritual counselling, guidance, and educational intervention: rapport, reflection, review, reconstruction, restoration, ritual, renewal and reconnection.²

Rituals. The second category is most closely described as rituals. These are religious activities that are drawn from a particular religion or faith. Most faith groups have a rich vein of such rituals, although in some cases these rituals can be conducted only by designated individuals at specific times of the year. Nonetheless, when applied appropriately to the right people in the right circumstances, such rituals possess great depth, majesty, and meaning and can deliver a powerful effect. Examples of these rituals include:

Islam—Tawbah. Tawbah is the Islamic concept of repenting to God after any sins and misdeeds. It is mentioned over 70 times in the Qur'an and has an entire chapter (Surah) devoted to the subject, *At-Tawbah*. Repentance and forgiveness are a direct matter between the individual and God, requiring no intercession. To complete a Tawbah, an individual is expected to complete six elements, including regret for past evils, wrongs and failure to obey Allah.²³

Judaism—Teshuva. A Jewish soldier in WW2 who was among the US troops who encountered Dachau Concentration Camp recalled:

'I was a liberator of Dachau during World War II. When I approached the barbed wire fence of the camp, I was overcome by the stench of rotting flesh. As the smell of rot entered my nostrils, I lost my faith in God. I could no longer believe it. I have since been an atheist.'²⁴

After many years of personal suffering, his pathway to redemption was through a Jewish forgiveness ritual. In Judaism, forgiveness is a duty or a *mitzvah* and is mentioned in the *Torah*. Yom Kippur, or the Day of Atonement, is the principal time for this and is considered one of the most important days in the Jewish calendar. As part of this process, Jews place great emphasis on acts of repentance or *teshuva*. Interestingly, the format of this is very similar to the Islamic act of Tawbah. Still, it includes four elements: reflecting on wrongs, seeking forgiveness, praying and turning to the *Torah* for guidance.²⁵

Christianity—Reconciliation. The Sacrament of Reconciliation, also known as 'Confession' or 'Penance,' is an opportunity for an individual to renew their faith. During the ritual, sins are privately recounted to a priest, who acts as an administrator

in the reconciliation between God and the sinner. It is also an opportunity for self-reflection and to take responsibility for one's actions. Largely a Roman Catholic rite, it may be conducted weekly before they receive the Eucharist or during seasons such as Lent or Advent.²⁶

SW&I management of spiritual care

DVA. As discussed, DVA will ultimately be responsible, on behalf of the Commonwealth Government, for restoring veterans' spiritual health following an SW&I. Yet, the responsibility for this remains unfulfilled. With only minor, largely passing comments, the volumes of DVA communication remain silent on the issue of spiritual health or care. That said, there was a policy that sought to address this. In 2023, the Department announced a *Veterans' Chaplaincy Pilot Program*. DVA acknowledged that,

'Evidence before the Royal Commission into Defence and Veteran Suicide has highlighted the important role that ADF Chaplains can play in suicide prevention and care. This pilot will extend that support with a focus on veterans and families undergoing complex or challenging transitions from ADF Service.'²⁷

The delivery concept for the program was to utilise current or former ADF Chaplains, as this is the support that ex-service organisations and veterans have principally requested.²⁷ In due course, this pool of chaplains was to be expanded by utilising 'civilian' Chaplains. While this was an excellent initial start, the program has two inherent and significant limitations:

Aid to civil community. Defence's primary role is the defence of the nation. In the event of serious internal unrest, Defence is also empowered under Section 119 of the Constitution and Section 51 of the *Defence Act 1903* (Cth) to act, when directed, for the protection of that state against domestic violence. This is referred to as *Defence Aid to the Civil Power* (DACP).²⁸ Outside of this, the use of Defence personnel to support the civilian community is covered under a policy known as *Defence Assistance to the Civil Community* (DACC). Generally, this falls into two categories: emergency support for major disasters, such as bushfires or floods, and non-emergency, short-term support for a community, such as high-profile events.²⁹

The use of serving ADF Chaplains within the scope of the proposed program places them outside of the scope of the DACP and DACC statutory framework. As such, they and the Commonwealth Government, will be unprotected against any liabilities arising from their actions.

Workload. Defence's pool of chaplains is quite small, with only 312 personnel serving across three Services, despite over 60 000 personnel.^{30,31} In many cases, these chaplains are in operational units, removed from high concentrations of veterans, such as south-east Queensland. It seems unlikely that such a small pool will have any significant capacity to support veterans, given that the 2021 Census estimates the veteran population of Australia at almost 600 000.³²

Although the *Veterans' Chaplaincy Pilot Program* is still in operation, its expansion is stalled, with the future unknown. Nonetheless, there is clearly a need for some form of sponsored assistance to veterans, commensurate with the support offered for medical and mental health issues.

Enduring need. Although the *Veterans' Chaplaincy Pilot Program* is a long-overdue and excellent initiative, it will not meet the need for a national approach to veterans' spiritual care and restoration following a SW&I. The answer to providing nationwide spiritual care for veterans lies in the plethora of religious and faith organisations across Australia. Although the 2021 Census notes a decline in religious affiliation, religions and faith groups across Australia still have a significant organisational and brick-and-mortar presence.³³ Within Christianity alone, there are an estimated 11 000 churches nationwide.³⁴

Regarding the Chaplaincy program, it has been noted that civilian religious organisations are generally unable to replicate the service provided by Defence chaplains, as they lack familiarity with veterans' and their families' experiences and the context of military life.²⁷ Undoubtedly, there is an element of truth in this. Zachary Moon argued in 2019 about the key role communities of faith could play in veterans' spiritual health.³⁵ Importantly, however, he warned these communities of faith that they would need to improve on their limited understanding of military experiences and culture. This includes issues of moral anguish, guilt, shame, disgust and contempt, as well as traumatic experiences within the unique culture of a military setting. Failure to do this would significantly diminish the efficacy of any attempt to establish ministries with veterans and military families.³⁵

DVA has noted that it will, in due course, provide education on some aspects of this to civilian faith organisations, with a focus on suicide prevention.²⁷ This is an incredibly important and topical area, given the Royal Commission on Veteran Suicide. However, the effective participation of civilian faith organisations requires more than that.

One example of this is the often-asked question, 'But why don't you just shoot to wound rather than kill?'³⁶ A simple enough question that is largely driven by movies and television, but one that demonstrates a fundamental lack of understanding about combat. There is no suggestion that civilian RSPs need a deep understanding of weapon characteristics, tactics, Laws of Armed Conflict or Rules of Engagement; however, they require at least an understanding of how these factors may shape a veteran's actions. This could be easily taught to civilian faith groups and RSP under the auspices of a DVA-led program.

SW&I Spiritual Health Protocol–Provisional (SW&ISHP–P)

Given that many of the treatments above have been in practical use for extended periods or have been validated by professional bodies, they can be assumed to have some validity and usefulness. In many cases, they are likely to meet SW&I's management and treatment needs. As the SW&I concept evolves, additional treatment approaches may emerge. Still, for now, the more compelling issue is the need for a broader management protocol to ensure appropriate, directed care for SW&I. The SW&I Spiritual Health Protocol – Provisional (SW&ISHP–P) may provide that vision, as it is set specifically within the SW&I paradigm and recognises the importance of both head and heart spiritual issues.¹

The proposed protocol is provisional since it, like the SW&IAT–P, still requires review and assessment by the practitioner community. For now, its provisional use needs to be set against the following requirements:

Multidisciplinary. Any significant incident that occurs in an operational circumstance will be a complicated mix of physical, cultural, emotional, moral, mental and spiritual issues. It will often occur in the most tumultuous and catastrophic circumstances. It is also very unlikely that the issue will be related to a single factor, but rather to a confusing blend of issues that will change over time. For example, mental or spiritual issues may not emerge as major challenges until after a serious physical wound has healed. This means that mental, physical, moral and spiritual issues may need to be addressed concurrently and in a multidisciplinary manner.

Shared reporting. The 'team-like' nature of the treatment will require all personnel involved to have access to shared information and reporting. Although additional privacy protocols will need to be established, spiritual, moral, medical, and other

allied professionals may meet to discuss cases and contribute to the veteran's medical files as required. While the needs of confessional sanctity are not in question, medical and psychological personnel will expect treating spiritual practitioners to operate under the same communication processes they use to both send and receive/store information. This will be a significant change in behaviour for many spiritual practitioners.

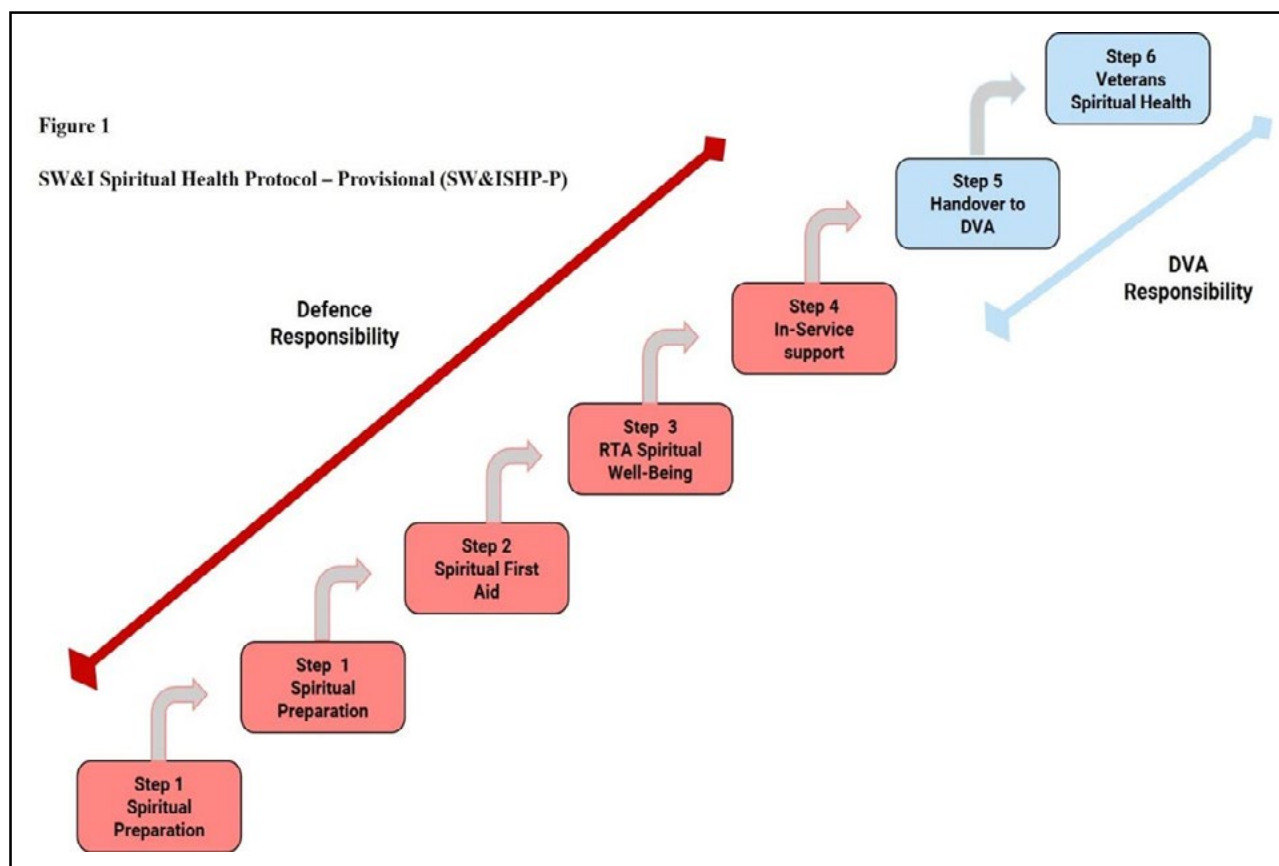
Multifaith/treatment agnostic. The SW&ISHP–P is a process, and while it is focused on spiritual care, it is also multifaith and accepting of agnostic and atheist beliefs. Likewise, the SW&ISHP–P does not favour or support any one treatment approach. Spiritual health care is, and must always be, initially driven by the patient/client's needs, not organisational preferences for religion or treatment types.

For now, it is proposed that the SW&ISHP–P will comprise six steps. It is important to note the continuum of care that is demonstrated here. Defence responsibility for spiritual health and recovery of any SW&I commences at the earliest stage of a soldier's transition to Service life and continues until that soldier becomes a veteran. At that point, the responsibility is handed over to DVA. The six steps in this process are (See Annex A):

Spiritual preparation. There are two times when Spiritual Preparation is valuable. The first is during recruitment or basic training. The purpose of this preparation is not evangelising or proselytising but rather the provision of information. Here, soldiers, both with and without faith contexts, receive initial information about the services offered by Army Chaplains in peace and war. This is currently conducted at both basic recruit and officer training facilities. The second time is predeployment. The purpose of this training is to prepare soldiers for the types of TPEs and SW&I that they may encounter.

Spiritual first aid. As the name implies, this is the immediate supportive action applied following a traumatic event that may lead to a SW&I. Unit or deployment group chaplains should deliver this as part of a coordinated response by a multidisciplinary team following a major engagement, event or incident. One critical tool that will need to be developed to support this is an Initial Spiritual Health Report (ISHR). The ISAR would provide the Chaplain and supporting medical and psychological personnel with a first review of a soldier's specific circumstances following an event and would serve as key initial documentation for the soldier's subsequent treatment as a veteran. A SWI&AT would support the ISAR.

Figure 1.



Return to Australia (RTA) Spiritual Wellbeing Program. The RTA program would be designed to prepare soldiers who may need spiritual support during their RTA. The program would be held in a theatre and consist of two components. The first component could be a video that discusses potential spiritual issues a soldier may face on RTA. The second would be a thorough review of the soldier's spiritual circumstances while deployed, and the possible family/home/unit circumstances on RTA. In this case, a diagnostic tool known as the Return Spiritual Health Report (RSHR) would need to be developed. The RSHR will provide the Chaplain and supporting medical and psychological personnel with a summary of the soldier's specific spiritual circumstances as they occurred in theatre. The RSHR will be included in the soldier's medical documentation and provided to the relevant chaplaincy support function upon RTA.

In-service spiritual support. If ongoing support during the member's career is required, then this can be provided through the existing Defence Chaplaincy network. If a soldier requires specific faith support for a religious grouping outside of existing representation within Defence, unit and formation

chaplains could reach out to relevant community groups to facilitate this. In this case, a diagnostic tool known as an Ongoing Spiritual Health Report (OSHR) will need to be developed.

Handover to DVA. Once a soldier has decided to transition to civilian life, DVA will facilitate responsibility for their overall wellbeing. Currently, when a soldier transitions to DVA's care, their relevant health documents are provided to DVA to support the determination of ongoing care requirements. To facilitate this, transitioning soldiers will usually need to complete transition documentation and attend medical and dental appointments. The same might apply to a SW&I. The soldier could be given the option to speak to a Chaplain before transition. If the soldier requests ongoing spiritual care, then the DVA should be made aware of this need. Establishing this handover process between Defence and DVA will also require significant interdepartmental consultation and policy development. To support this, a diagnostic tool known as a Handover Spiritual Assessment Report (HSAR) will also need to be developed.

Veteran's spiritual health. For as long as required, the veteran will be supported by DVA and through outsourced providers and faith groups. As discussed,

spiritual health care will aim to restore the veteran to their initial state without any presumption of improving or enhancing the veteran's approach to spirituality.

Conclusion

The proposed SW&ISH-P accepts that many of the MI and spiritual health-based treatments discussed in this paper have been in practical use for extended periods or have been validated by professional bodies. As such, they can likely be assumed to have some validity and usefulness, and to meet the management and treatment needs of SW&I. The more compelling issue is the need for a broader management protocol that sets a vision for the appropriate and directed care of SW&I. SW&ISH-P may provide that vision, as it is specifically set within the SW&I paradigm and recognises the importance of both head and heart spiritual issues.

For this to be successful, there needs to be a much clearer handover between Defence and DVA matters of spiritual health. This does not occur now. This will be difficult as many religions and faith groups will struggle with issues of confidentiality and the sanctity of the confessional. RSP will also need to meet the professional communication expectations of their peers in psychology and medicine, who will expect a measure of shared reporting and patient

summaries. Both areas can be managed and will be critical to a fulsome and coherent approach to veteran spirituality.

There should be no doubt that the Commonwealth Government, through agencies such as DVA, is responsible for veterans' spiritual health. In the same way that the DVA is ultimately accountable for a veteran's leg injuries and for restoring them to their previous state, they should also be held responsible for SW&I. There should, however, be no presumption of spiritual health support beyond restoration. While evangelism and proselytisation are aspects of the vision or mission of many religions, they are not appropriate in this context and fall outside DVA's scope.

Despite laudable initiatives such as the Veterans' Chaplaincy Pilot Program, DVA cannot expect to meet the spiritual health needs of over 600,00 veterans. In a medical sense, DVA already understands this and virtually all its medical services are outsourced to commercial or other government providers. Church and faith groups, as part of a broader treatment protocol, play a significant role.

*Corresponding Author: Murray James Davies,
murray.davies62@gmail.com
Authors: M J Davies*

References

1. Davies MJ. Assessing spiritual wounds and injuries—some initial thinking. *Journal of Military and Veterans' Health*. 2025;33(4):8-27. <https://doi-ds.org/doi/10.2025-32433844/JMVH>
2. Carey L, Hodgson T. Chaplaincy, spiritual care and moral injury: considerations regarding screening and treatment. *Front Psychiatry*. 2018;9:619:1-18. <https://doi.org/10.3389/fpsy.2018.00619>
3. Davies MJ. Spiritual injuries—an Australian Defence Force experience. *Journal of Veterans Studies*. 2020;6(1). <https://doi.org/10.21061/jvs.v6i1.152>
4. Hall KL, editor. *The Oxford companion to the Supreme Court of the United States*. Oxford: Oxford University Press; 1992. p. 717-726.
5. Feldman N. *Divided by God*. New York: Macmillan; 2005. p. 20.
6. Australian Government. Commonwealth of Australia Constitution Act [Internet]. Available from: https://www8.austlii.edu.au/cgi-bin/viewdoc/au/legis/cth/consol_act/coaca430/s116.html
7. Oxford English Dictionary. Restoration [Internet]. Available from: <https://www.oed.com/search/dictionary/?scope=Entries&q=restoration>
8. Department of Defence. ADF health strategy [Internet]. Canberra: Department of Defence; 2020. Available from: <https://www.defence.gov.au/about/strategic-planning/adf-health-strategy>
9. Department of Veterans' Affairs. Health services for the veteran community [Internet]. Canberra: Department of Veterans' Affairs. Available from: <https://www.dva.gov.au/get-support/health-support/health-services/health-services-veteran-community>
10. Australian Army. Royal Australian Army Chaplains Department [Internet]. Canberra: Australian Army. Available from: <https://www.army.gov.au/about-us/army-corps/royal-australian-army-chaplains-department>

11. Department of Veterans' Affairs. Veterans' chaplaincy pilot program [Internet]. Canberra: Department of Veterans' Affairs; 2023. Available from: <https://www.dva.gov.au/get-support/transitioning-civilian-life/veterans-chaplaincy-pilot-program#what-is-the-veterans-chaplaincy-pilot-program>
12. World Health Organization. International classification of diseases, eleventh revision (ICD-11) [Internet]. Geneva: World Health Organization; 2021. Available from: <https://icd.who.int/browse11>
13. American Psychological Association. Cognitive behavioral therapy (CBT) [Internet]. Available from: <https://www.apa.org/ptsd-guideline/treatments/cognitive-behavioral-therapy>
14. Pearce MJ, Koenig HG, Robins CJ, et al. Religiously integrated cognitive behavioural therapy: a new method of treatment for major depression in patients with chronic medical illness. *Psychotherapy*. 2015;52(1):56-66. <https://doi.org/10.1037/a0036448>
15. Gallagher MW, Resick PA. Mechanisms of change in cognitive processing therapy and prolonged exposure therapy for PTSD: preliminary evidence for the differential effects of hopelessness and habituation. *Cogn Ther Res*. 2012;36(6). <https://doi.org/10.1007/s10608-011-9423-6>
16. American Psychological Association. Cognitive processing therapy (CPT) [Internet]. Available from: <https://www.apa.org/ptsd-guideline/treatments/cognitive-processing-therapy>
17. Murray H, Ehlers A. Cognitive therapy for moral injury in post-traumatic stress disorder. *Cogn Behav Ther*. 2021;14:e8. <https://doi.org/10.1017/S1754470X21000040>
18. Held P, Klassen BJ, Brennan MB, et al. Using prolonged exposure and cognitive processing therapy to treat veterans with moral injury-based PTSD: two case examples. *Cogn Behav Pract*. 2018;25(3):377-390. <https://doi.org/10.1016/j.cbpra.2017.09.003>
19. Evans WR, Held P, Smith DL, et al. Moral injury and moral healing in prolonged exposure for combat-related PTSD: a case study. *Cogn Behav Pract*. 2021. <https://doi.org/10.1016/j.cbpra.2020.12.006>
20. American Psychological Association. Prolonged exposure (PE) [Internet]. Available from: <https://www.apa.org/ptsd-guideline/treatments/prolonged-exposure>
21. Benner DG. Strategic pastoral counseling: a short-term structured model. Grand Rapids (MI): Baker Academic; 2003. p. 73.
22. Ames D, Erickson ZD, Wachen JS, et al. Treatment of moral injury in U.S. veterans with PTSD using a structured chaplain intervention. *J Relig Health*. 2021;60(5):3052-3060. <https://doi.org/10.1007/s10943-021-01312-8>
23. Rassool GH. Sins, Tawbah and the process of change. *Int J Isl Psychol*. 2021;4(1). Available from: <https://journal.iamphome.org/index.php/IJIP/article/view/28>
24. Kavon E. Acher and the difficulties of Teshuvah. *Jerusalem Post* [Internet]. 2021. Available from: <https://www.jpost.com/judaism/acher-and-the-difficulties-of-teshuvah-677341>
25. BBC. Forgiveness [Internet]. 2023. Available from: <https://www.bbc.co.uk/bitesize/guides/zysf2nb/revision/4>
26. Scroope C. Christianity: Roman Catholic. Rituals and practice [Internet]. SBS Cultural Atlas; 2022. Available from: <https://culturalatlas.sbs.com.au/religions/christianity-roman-catholic/resources/christianity-roman-catholic-rituals-and-practices>
27. Department of Veterans' Affairs. Veterans' chaplaincy pilot program [Internet]. Canberra: Department of Veterans' Affairs; 2023. Available from: <https://www.dva.gov.au/get-support/transitioning-civilian-life/veterans-chaplaincy-pilot-program#what-is-the-veterans-chaplaincy-pilot-program>
28. Australasian Legal Information Institute. Aid to the civil power—counter-terrorism—legal aspects [Internet]. Available from: <http://www5.austlii.edu.au/au/journals/AUCrimPCF/1983/2.pdf>
29. Parliament of Australia. Defence Legislation Amendment (Enhancement of Defence Force Response to Emergencies) Bill 2020 [Internet]. Canberra: Parliament of Australia; 2020. Available from: https://www.aph.gov.au/Parliamentary_Business/Bills_Legislation/bd/bd2021a/21bd015
30. Shepard T. ADF has 108 evangelical chaplains with each representing just 15 members. *The Guardian* [Internet]. 2023. Available from: <https://www.theguardian.com/australia-news/2023/jul/30/adf-has-108-evangelical-chaplains-with-each-representing-just-15-members>. Accessed 2025 May 14.
31. Parliament of Australia. The state of Australia's defence: a quick guide [Internet]. Canberra: Parliament of Australia; 2022. Available from: https://www.aph.gov.au/About_Parliament/Parliamentary_departments/Parliamentary_Library/pubs/rp/rp2223/Quick_Guides/StateofAustraliasDefence

32. Department of Veterans' Affairs. Census reveals nearly 600,000 veterans in Australia [Internet]. Canberra: Department of Veterans' Affairs; 2022. Available from: <https://www.dva.gov.au/newsroom/latest-news-veterans/census-reveals-nearly-600000-veterans-australia>
33. Australian Bureau of Statistics. Religious affiliation in Australia [Internet]. Canberra: Australian Bureau of Statistics. Available from: <https://www.abs.gov.au/articles/religious-affiliation-australia>
34. National Church Life Survey Research. Number and size of local churches in Australia [Internet]. Sydney: National Church Life Survey Research; 2022. Available from: <https://www.ncsls.org.au/articles/number-and-size-of-local-churches-in-australia>
35. Moon Z. "Turn now my vindication is at stake": military moral injury and communities of faith. *Pastoral Psychology*. 2019;68:93-105. <https://doi.org/10.1007/s11089-017-0795-8>.
36. Davies MJ. Spiritual wounds in ADF veterans. Approved Army Research Scheme Report No. DIAARC0317. Canberra: Australian Army; 2019.

Annex A - Moral injury and spiritual management tools

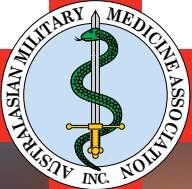
Moral injury treatment and management tools			
Name	Outline	Year	Principal contributors
Person-centred therapy (PCT)	Person-centred therapy, also referred to as non-directive, client-centred or Rogerian therapy, was pioneered by Carl Rogers in the early 1940s. This form of psychotherapy is grounded in the idea that people are inherently motivated towards achieving positive psychological functioning. (Yao and Kabir, 2023).	1940s	Carl Rogers
Cognitive behaviour therapy (CBT)	CBT focuses on the relationship among thoughts, feelings and behaviours; targets current problems and symptoms; and focuses on changing patterns of behaviours, thoughts and feelings that lead to difficulties in functioning (APA, 2017b).	1960	Aaron Beck
Cognitive processing therapy (CPT)	CPT promotes recovery from PTSD by directly modifying maladaptive cognitions developed following the traumatic event (APA, 2017a).	1980	Patricia Resick
Repetitive transcranial magnetic stimulation (RTMS)	Induction of finger and foot movements through the use of a magnetic coil placed on the motor cortex. Transcranial magnetic stimulation (TMS) is a neurophysiological procedure for non-invasive stimulation of the nervous system (Chail, 2018)	1985	Anthony Barker
Eye Movement Desensitisation and Reprocessing (EMDR) Therapy	A structured therapy that encourages the patient to briefly focus on the trauma memory while simultaneously experiencing bilateral stimulation (typically eye movements), which is associated with a reduction in the vividness and emotion associated with the trauma memories (APA, 2017e).	1987	Francine Shapiro
Narrative exposure therapy (NET)	Narrative exposure therapy is a treatment for trauma disorders, particularly in individuals suffering from complex and multiple trauma. It has been most frequently used in community settings and with individuals who experienced trauma as a result of political, cultural or social forces (such as refugees) (APA, 2017f).	1990	Maggie Schauer, Thomas Elbert, & Frank Neuner
Prolonged exposure (PE)	Prolonged exposure is a specific type of cognitive behaviour therapy that teaches individuals to gradually approach trauma-related memories, feelings and situations (APA, 2017c).	1991	Edna Foa
Stress Inoculation Training (SIT)	SIT consists of three overlapping phases. The first, conceptualisation, is an educational phase that emphasises the development of a warm, collaborative relationship through which careful assessment and problem reconceptualisation are carried out. The second, skill acquisition and rehearsal, targets and develops a repertoire of palliative and instrumental coping skills to reduce anxiety. A table of common cognitive coping skills is included to exemplify the range of coping skills employed. The final phase, application and follow-through, focuses on activities that transfer coping skills to real life and prevent relapse (Meichenbaum & Deffenbacher, 1988).	1998	Donald H. Meichenbaum and Jerry L. Deffenbacher
Trauma-focused CBT (TF-CBT)	TF-CBT is a conjoint parent-child treatment that uses cognitive behavioural principles and exposure techniques to prevent and treat posttraumatic stress, depression and behavioural problems. This review defined TF-CBT, differentiated it from other models, and assessed the evidence base (de Areliano et al., 2014).	2006	Judith A. Cohen, Anthony P. Mannarino & Esther Deblinger

Brief eclectic psychotherapy (BEP)	Brief eclectic psychotherapy for PTSD (BEPP) is an evidence-based therapeutic approach that combines and integrates elements from psychodynamic, cognitive behavioural and directive psychotherapy. Psychoeducation is conducted jointly with the patient and their partner (Gersons & Schnyder, 2013).	2013	Berthold Gersons
Moral injury reconciliation therapy (MIR)	Spiritually integrated psychotherapy starts with a person's story rather than a disease or condition. It seeks to build a transdiagnostic integration of psychological and theological disciplines and resources (Cronshaw, 2021).	2018	Lewis Jeffery Lee
Written exposure therapy (WET)	Written Exposure Therapy is a manualised exposure-based psychotherapy for PTSD that is recommended by the US DVA Clinical Practice Guideline (Sloan & Marx, n.d).	2019	Denise M. Sloan & Brian P. Marx.
Adaptive disclosure therapy (ADT)	Adaptive disclosure is a brief manualised therapy developed specifically to address trauma in military service members. Adaptive disclosure includes many elements of other CBTs for PTSD to target combat and operational traumas specific to service members: life-threatening experiences, traumatic loss and moral injury (Litz, 2021).	2021	Brett Litz

Spiritual treatment and management tools

Name	Outline	Year	Principal contributor
Tawbah	The Islamic concept of repenting to God for any sins and misdeeds. To complete Tawbah, an individual must complete six elements (Rassool, 2021).		Islam
Sacrament of Reconciliation	Also known as 'Confession' or 'Penance,' it is an opportunity for an individual to renew their faith. During the ritual, sins are privately recounted to a priest, who acts as an administrator in the reconciliation between God and the sinner (Scroope, 2022).		Christianity – Roman Catholicism
Teshuva	In Judaism, forgiveness is a duty or a mitzvah and is mentioned in the Torah. Yom Kippur, or the Day of Atonement, is the principal time for this and is considered one of the most important days in the Jewish calendar (BBC, 2023). As part of this process, Jews place great emphasis on acts of repentance, or teshuva (BBC, 2023).		Judaism
Devi Aparadha Kshamapana Stotram	A prayer recited to seek forgiveness from the Goddess Mother for any mistakes committed knowingly or unknowingly. (Sanatan Veda, n.d.)		Hindu
Kshama (Sanskrit) or Khama (Pali)	Traditionally, in Buddhism, forgiveness is practised by repeating phrases of forgiveness towards oneself, towards those who have harmed us, and towards those we have harmed (MacDonnell, 1892, pp. 77-78).		Buddhist
Structured Pastoral Care (SPC)	SPC is also known as a Structured Chaplain Intervention (SCI) and is a tool designed to treat MI among veterans with significant PTSD symptoms. Utilises the original scriptures in each of the five major religious traditions to address the major symptoms of MI (Benner, 2003).	1993	David Benner
BSS	Based on James Fowler's (1974) stages of faith, the BSS treatment model argues that a potentially morally injurious event constitutes a transgression and a violation of sacramental beliefs. It is an interfaith tool that can be used with religious and nonreligious participants and is facilitated by mental health providers, chaplains or pastoral counsellors. BSS focuses on reducing spiritual distress (Fowler, 1974; Fowler & Dell, 2006; Harris, 2011).	2000	J Irene Harris
Religious Integrated Cognitive Behavioural Therapy (RICBT)	RICBT follows the essential format and approach of CBT. It differs because it uses the patient's religious tradition as a major foundation to identify and replace unhelpful thoughts and behaviours to reduce depressive symptoms. Some specific tools used in RICBT include scripture memorisation, contemplative prayer, challenging thoughts, using the patient's religious resources and involvement in the religious community (Pearce et al., 2015)	2015	Michelle Pearce

Pastoral Narrative Disclosure (PND).	A MI treatment that addresses a complex trauma-related syndrome involving a correlation of biological, psychological, social and spiritual symptoms that can have a substantial impact on health and wellbeing. With this tool, treating professionals seek to use the sacrament of penance to acknowledge the moral pain veterans experience after returning from combat (Carey & Hodgson, 2018).	2018	Lindsay Carey and Timothy Hodgson
Spiritually Integrated CPT (SICPT)	SICPT uses the spiritual concepts and rituals of compassion, grace, spiritually guided imagery, repentance, confession, forgiveness, atonement, blessing, restitution and making amends (Pearce et al., 2018).	2018	Michelle Pearce



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Tick-Borne Encephalitis and Immunisation

G D Shanks

Abstract

Tick-borne encephalitis (TBE) is a flavivirus infection transmitted by Ixodes ticks across Eurasia. Recently, rare indigenous cases of TBE have been reported in the United Kingdom, although most documented traveller infections come from Central Europe. Populations at risk are those undertaking forest activities in the summer, which include some Australian Defence Force (ADF) personnel participating in the training mission Operation (OP) Kudu in the UK. A killed vaccine has been available in Europe for decades and has recently been registered in the USA. Despite the lack of any known military cases during the 1990s Bosnian deployments, selected USA and ADF military members are now receiving immunisation against TBE in conjunction with deployment on OP Kudu. The three-dose (0, 1, 6 months) killed vaccine was generally very well-tolerated in the US military during Bosnian deployments. TBE immunisation is similar to Japanese encephalitis in that a well-established vaccine is used for a very low-risk, high-consequence pathogen.

Key words: tick-borne encephalitis, military, travel medicine, immunisation

Clinicians should be aware of the possibility of TBE when the cause for encephalitis is not identified, even in the absence of travel to previously identified endemic regions.¹

Encephalitis caused by viral pathogens is, fortunately, rare but potentially very consequential. Arboviruses spread by mosquitoes that cause encephalitis in Australia include Murray Valley Encephalitis virus (MVE), Japanese Encephalitis virus (JEV) and Kunjin Virus (KUNV). Tick-borne encephalitis (TBE) is considered confined to Eurasia and is rarely seen among travellers in Australia.² In 2025, it was decided that TBE immunisation would be appropriate for Australian Defence Force (ADF) members sent to Europe on OP Kudu, a training mission to the Ukrainian Army largely based in the United Kingdom (See figure as well as a map of TBE risk across Eurasia from the US CDC: www.cdc.gov/tick-borne-encephalitis/data-maps/index.html). Although similar to JEV immunisation for regional Southeast Asian deployments, the TBE vaccine is not registered in Australia and must therefore be accessed through a special access scheme of the Therapeutic Goods Administration (TGA), which requires each recipient to provide informed consent.³ Although the TBE vaccine has been successfully used for decades in many European countries and travellers to Europe, this brief review has been written to provide background for ADF medical officers who are unfamiliar with the product but may be called on to supervise soldier preparation for OP Kudu.⁴



Figure: ADF Operation Kudu in the United Kingdom showing unit shoulder patch. Photographer LCDR Ryan Zerbe for photograph S20233386. Available from the ADF: https://images.defence.gov.au/assets/Home/Search?Query=20231031ran8557924_0005.jpg&Type=Filename

TBE epidemiology is that of an arbovirus transmitted by Ixodes ticks, typically in European forests during midyear summer months, although infection risk exists across all of Eurasia into Siberia.⁵ It is an uncommon infection with a few thousand cases reported each year across Europe.⁶ TBE may present as a biphasic febrile illness, but severe neurological symptoms, including encephalitis, may not result until weeks after exposure to a tick. Deer are thought to be the primary reservoir host, with some contribution from rodents. Its original military importance was from Soviet Russian soldiers exposed

during World War II, and there were concerns that it might have been considered as a biowarfare agent.⁷ There is no recognised therapy for TBE other than supportive care.

European countries have been using killed TBE vaccines since the 1980s, and their use has gradually expanded across much of Europe, with emphasis on Central and Eastern Europe. During 2000–2021, over 75 million doses of TBE vaccine have been administered, and the immunisation is generally regarded as appropriate for all adult populations with a good safety profile.⁸ Adverse events are primarily associated with initial doses of the TBE vaccine. A recent systematic review of TBE immunisation included 17 studies.⁹ Cumulated information suggested that less than a quarter of vaccinees had local reactions such as pain and tenderness at the injection site. Systemic reactions, such as fever, were reported in fewer than one-third of patients.⁹ Most studies reported no severe adverse events after TBE immunisation and those reporting severe adverse events often did not directly associate them with causation by the vaccine. United Nations forces deployed in the 1990s to the former Yugoslavia were concerned enough about TBE to vaccinate many of their soldiers, but infection rates were either non-existent or very low.¹⁰ The US Army immunised nearly 4000 soldiers deploying into Bosnia using an accelerated three-dose regimen, which was well-tolerated with less than one per cent reporting adverse events such as nausea, headache, myalgias and fever.¹¹ Approximately 80% of US soldiers given the vaccine on days 0, 7, 28 were known to have seroconverted. The French Army concluded that the TBE vaccine was safe but cost-ineffective for preventing a rare infectious disease in soldiers.¹²

Understanding of TBE risk has been evolving as more physicians test for this rare disease and as ecological changes occur due to global warming. Recently, the first evidence of TBE in the United Kingdom was documented.¹ With only very few reported cases from the UK, it is difficult to estimate the infection risk, but it is likely <1:100 000 exposed to summertime outdoor activities. The decision to immunise, therefore, is based on risk tolerance among otherwise well soldiers on a peacetime mission to Europe. Analogous situations in the travel medicine community have generally recommended immunisation for any person contemplating extensive outdoor exposure during the European summer.¹³ Despite OP Kudu's mission to train Ukrainian soldiers, the actual documented risk in Ukraine has been very low, with the highest infection rates usually from the Baltic region.¹⁴ There have been no reports of TBE associated with distinct military missions in the recent past.

The TBE vaccine is thought to be highly efficacious, but this is difficult to test in a rare infection; >90% seroconversion rates are generally reported among travellers.⁴ Extending the booster doses from three to ten years for the civilian population of Switzerland did not appear to cause any increase in infections.¹⁵ Adverse events to immunisation, especially severe ones, are infrequent and the vaccine is widely regarded as safe in otherwise well travellers.⁸ The USA military uses the vaccine in its soldiers and their dependents in Europe, despite there being fewer than one case per year reported in the US military population.¹⁶ As the vaccine is only available under the TGA special access scheme in Australia, relatively few Australian medical officers outside of specialised travel medicine clinics have any experience with the TBE vaccine. Soldiers deploying under OP Kudu need to be counselled about the risks of infection and the expected adverse events of immunisation before giving informed consent.

To date, there have been no reports of TBE or severe adverse events with the vaccine among Australian military members. Risk and its avoidance are social constructs that evolve over time, especially in the military where some risks are accepted as part of serving the nation. Safe vaccines given for rare diseases continue to be used, but some worries increasing the total number of vaccines may cause some to refuse in the face of social media-generated antivaccine propaganda. An individual soldier's perception of risk may be informed by their experiences during the COVID-19 pandemic more than any appreciation of rare, vector-borne diseases outside of Australia. It is the medical officer's task to clearly state the importance of protection against infrequent but highly consequential infections such as TBE.

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Author affiliations: Australian Defence Force Infectious Disease and Malaria Institute, Gallipoli Barracks, Enoggera, Queensland, Australia

University of Queensland, School of Public Health, Brisbane, Herston, Queensland, Australia

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*Corresponding Author: G Dennis Shanks,
Dennis.Shanks@defence.gov.au*

Authors: G D Shanks^{1,2}

Author Affiliations:

1 ADF Malaria and Infectious Disease Institute

2 University of Queensland - School of Public Health

References

1. Callaby H, Beard KR, Wakerley D, Lake MA, Osborne J, Brown K, Wand N, Warner J, Holding M, Davies NW. Tick-borne encephalitis: from tick surveillance to the first confirmed human cases, the United Kingdom, 2015 to 2023. *Eurosurveillance* 30: 2400404; 2025
2. Chaudhuri A, Růžek D. First documented case of imported tick-borne encephalitis in Australia. *Internal Medicine Journal*. 2013;43: 93-96.
3. McGuinness SL, Lau CL, Leder K. The evolving Japanese encephalitis situation in Australia and implications for travel medicine. *Journal of Travel Medicine*. 2023;30: taad029.
4. Steffen R, Schmitt H-J, Zavadská D. Tick-borne encephalitis vaccine—a wave of news. *Journal of Travel Medicine*. 2022;29: taac030.
5. Lindquist L, Vapalahti O. Tick-borne encephalitis. *The Lancet*. 2008;371: 1861-1871.
6. Halsby K, Davidson A, Ravikumar S, Pilz A, Stark JH, Moisi JC. Publicly available surveillance data on tick-borne encephalitis in Europe, 2023. *Ticks and Tick-borne Diseases* 15: 102388; 2024
7. Mazanik A. Arbovirology and Cold War collaborations: a transnational history of the tick-borne encephalitis vaccine, 1930-1980. *Journal of the History of Medicine and Allied Sciences*. 2024;79: 254-273.
8. Hills SL. Tick-Borne Encephalitis Vaccine: Recommendations of the Advisory Committee on Immunization Practices, United States, 2023. *MMWR. Recommendations and Reports* 72; 2023
9. Rampa JE, Askling HH, Lang P, Zens KD, Gültekin N, Stanga Z, Schlagenhauf P. Immunogenicity and safety of the tick-borne encephalitis vaccination (2009–2019): A systematic review. *Travel medicine and infectious disease*. 2020;37: 101876.
10. McNeil JG, Lednar WM, Stansfield SK, Prier RE, Miller RN. Central European tick-borne encephalitis: assessment of risk for persons in the armed services and vacationers. *Journal of Infectious Diseases*. 1985;152: 650-651.
11. Craig SC, Pittman PR, Lewis TE, Rossi CA, Henschel EA, Kuschner RA, Martinez C, Kohlhasse KF, Cuthie JC, Welch GE. An accelerated schedule for tick-borne encephalitis vaccine: the American Military experience in Bosnia. *The American journal of tropical medicine and hygiene*. 1999;61: 874-878.
12. Desjeux G, Galois-Guibal L, Colin C. Cost-benefit analysis of vaccination against tick-borne encephalitis among French troops. *Pharmacoeconomics*. 2005;23: 913-926.
13. Steffen R. Epidemiology of tick-borne encephalitis (TBE) in international travellers to Western/Central Europe and conclusions on vaccination recommendations. *Journal of travel medicine* 23: taw018; 2016
14. Yurchenko OO, Dubyna DO, Vynograd NO, Rogovskyy AS. Tick-borne encephalitis cases recorded in Ukraine over 1990–2018. *Journal of Travel Medicine* 27: taaa075; 2020
15. Schmidt AJ, Altpeter E, Graf S, Steffen R. Tick-borne encephalitis (TBE) in Switzerland: does the prolongation of vaccine booster intervals result in an increased risk of breakthroughs? *Journal of travel medicine* 29: taab158; 2022
16. Stahlman S. Surveillance snapshot: tick-borne encephalitis in Military Health System beneficiaries, 2012–2021. *MSMR* 29: 23; 2022

Prevalence of Long-term Health Conditions in Current-serving, Previous-serving and Never-serving Australians: An Age-Adjusted Comparative Analysis Using 2021 Census Data

R C Beaton, G McLeod, S Al-Janabi, C F Finch

Abstract

Background: Long-term health conditions (LTHC) are major contributors to morbidity and mortality in Australia and may be more prevalent in Australian Defence Force (ADF) veterans. Previous analyses are limited because they do not control for age and sex confounding or disaggregate by ADF service status.

Purpose: We aimed to estimate and compare the age-standardised prevalence of self-reported LTHC by service status (current, former and never-serving persons). We also investigated associations between service status, sex, age and reporting of at least one LTHC.

Material and methods: We used 2021 Census data from the Australian Bureau of Statistics (ABS) to determine the prevalence of reporting LTHC by service status. Prevalence estimates were age-standardised using the ABS standard population. We estimated prevalence rate ratios (PRR) using Poisson regression.

Results: Crude prevalence was lower in current-serving persons and higher in former-serving persons compared with never-serving persons. After age-standardisation, these differences were attenuated, but remained: prevalence was lower in current-serving (2061 per 10 000) and higher in former-serving (3159 per 10 000) than in never-serving persons (2623 per 10 000). Older age and female sex were associated with a higher prevalence of reporting LTHC.

Conclusions: Reporting of LTHC was more prevalent among former-serving persons and less prevalent among current-serving persons than among never-serving persons. Age partly explained these differences, highlighting the importance of age-standardisation when comparing veteran and non-serving populations. The drivers of these differences are likely multifactorial and require further study.

Keywords: Long-term health conditions, Australian Defence Force, Census data

Introduction

Noncommunicable diseases, such as ischaemic heart disease and cancer, were the leading cause of mortality among Australians between 1990 and 2019.¹ These conditions also represent a substantial burden of morbidity: over half of the population in 2022 reported having a long-term health condition (LTHC), such as arthritis, asthma, back problems, cancer, and mental and behavioural conditions

(including mood disorders, alcohol and drug problems and dementia).² The prevalence of these conditions may vary across population groups.

Among Australian veterans, service experience has been associated with a higher prevalence of LTHC later in life.³ The Australian Institute of Health and Welfare (AIHW) used data from the 2020–21 National Health Survey and the 2020–21 National Study of Mental Health and Wellbeing to show that veterans

(current- and former-serving persons) reported more LTHC than never-serving persons.⁴ This finding may reflect effects of wartime experience, age-related illnesses or policy changes relating to the assessment of war-related disability in the 1980s and 1990s in Australia.⁵ However, it is difficult to rule out any of these possibilities because of the small veteran sample size.

To overcome this issue, data from the 2021 Australian National Census of Population and Housing can be explored. The 2021 Census allows for population-level analyses of veterans because the ABS asked two new questions about people's service with the Australian Defence Force (ADF)⁶ and their self-reported presence of long-term health conditions.⁷ Using this data, the ABS indicated a higher prevalence of reporting LTHC among former-serving persons compared to those who never served within most age groups.⁶ In contrast, current-serving persons report a lower prevalence of LTHC than those who had previously or never served; however, these comparisons were not presented by age group. These findings may reflect the general physical and mental fitness and younger age profile of the current-serving population.

While broadly informative, both the AIHW and ABS reports had important caveats. The AIHW report did not distinguish between service status (current, former, or never-serving), despite these groups differing significantly in both age distribution and healthcare experience. Nor did it apply age-adjustment methods, such as standardisation, when comparing LTHC prevalence among veterans to that of persons who have never served. These constraints could not be addressed using the AIHW data due to the relatively small veteran sample. Similarly, although the ABS used a large, representative dataset from the 2021 Census, published comparisons of LTHC prevalence by service status were not age-standardised. While some results were disaggregated by age group, overall comparisons between service groups were not adjusted for differences in age distribution. This is important because the prevalence of reporting LTHC increases with age, and age distributions differ between current- and former-serving populations. As a result, crude comparisons may be confounded by age. Although age-group breakdowns provide useful context, they do not fully account for differences in age structure, making it difficult to determine whether observed differences reflect age or service-related factors. This may lead to misinterpretation of group-specific health burdens.

The primary aim of this analysis was to use 2021 Census data to compare the age-standardised

prevalence of self-reported LTHC among current-, former- and never-serving persons. We also used regression to examine associations between service status and the prevalence of reporting at least one LTHC, and whether this differed by sex and age group. Individual LTHC were not analysed because the Census used self-reported data and short-form question types that are not diagnostic. Our findings provide population-level estimates of LTHC prevalence in these populations, which could be monitored over time to inform healthcare delivery, policy and practice, as well as future research directions.

Methods and materials

The ABS TableBuilder online tool was used to extract data (<https://www.abs.gov.au/websitedbs/censushome.nsf/home/tablebuilder>) from the 2021 Census of Population and Housing (Counting Persons 15 years or over). We extracted aggregate data by age group (15–64 years in 5-year bins), sex (male, female), ADF personnel service status (current-, former- and never-serving) and count of selected long-term health conditions⁷ (0, 1, 2, 3+). The data for veterans included regular and reservist members.⁶ We acknowledge that these cohorts are likely very different due to the nature of their work and workplace, and, where the numbers allow, in future studies, they should be separated. The age limit was necessary because there was no self-reported LTHC data for current-serving members aged 65 years and older. After all, compulsory retirement is 60 and 65 for regular and reservist members, respectively. Table 1 shows the estimated population distribution of current-, former- and never-serving persons used in the analysis. Estimates are presented because Census count values are slightly perturbed to protect the confidentiality of individuals. At the same time, these adjustments introduce small random errors; the ABS states that the overall information value of the data is not affected.⁸

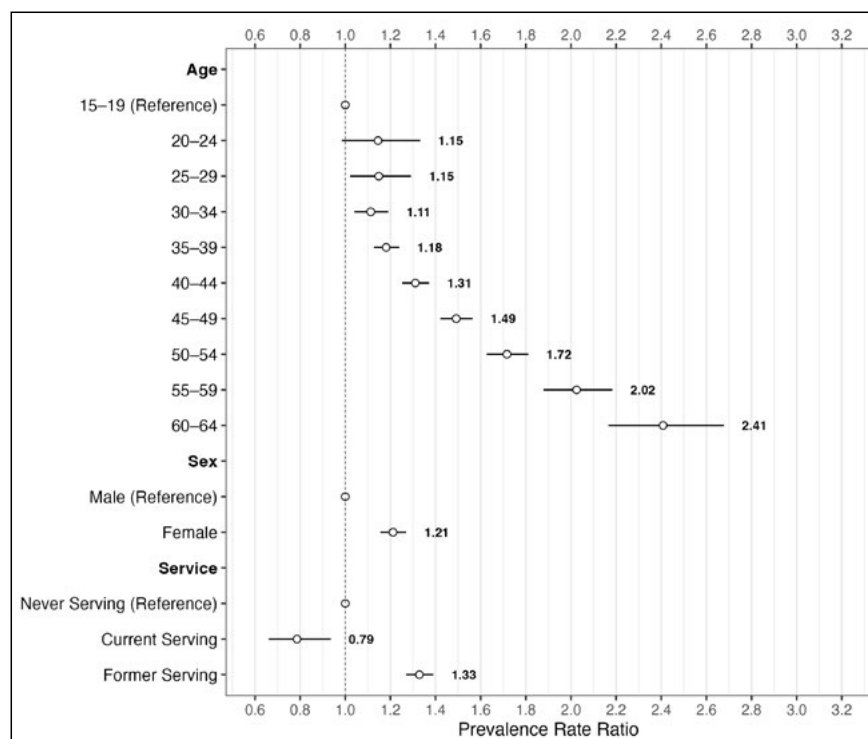
To calculate prevalence rates (PR, 95%CI) of self-reporting ≥ 1 LTHC in current-, former- and never-serving populations, we calculated crude rates and applied direct age standardisation using the ABS 2001 standard population, as recommended by the AIHW.⁹ We also undertook regression modelling to assess the influence of sex, age and service status on the prevalence of reporting at least one LTHC (yes/no). Poisson regression with a loglink function was used to estimate adjusted prevalence rate ratios (PRR, 95%CI) by age, sex and service status. PRRs were obtained by exponentiating model coefficients. The model was selected based on fit, as assessed by Akaike's information criterion (AIC) and likelihood

Table 1. Population distribution by sex and service for persons aged 15–64 years answering the service question as extracted from ABS TableBuilder, 2021 Census, counting persons 15 years or over.

Age (Years)	Male						Female					
	Current serving	%	Former serving	%	Never serving	%	Current serving	%	Former serving	%	Never serving	%
15–19	2 448	4%	502	0.3%	674 834	10%	858	5%	197	0.5%	642 747	9%
20–24	10 131	16%	2 845	2%	712 566	10%	3 347	20%	1 002	2%	702 443	9%
25–29	11 007	17%	7 736	4%	775 569	11%	3 179	19%	1 670	4%	804 941	11%
30–34	10 159	16%	13 679	8%	791 083	11%	2 602	15%	2 533	6%	868 928	12%
35–39	8 642	13%	15 782	9%	791 949	11%	2 070	12%	3 008	7%	859 112	11%
40–44	6 128	9%	17 430	10%	713 093	10%	1 486	9%	4 369	10%	764 735	10%
45–49	5 448	8%	23 636	13%	696 456	10%	1 297	8%	5 660	13%	762 128	10%
50–54	5 170	8%	30 858	17%	676 046	10%	1 144	7%	8 195	19%	751 059	10%
55–59	3 917	6%	35 020	19%	646 393	9%	657	4%	7 946	19%	719 177	10%
60–64	2 473	4%	35 797	20%	613 408	9%	381	2%	8 090	19%	693 418	9%
Total	65 523		183 285		7 091 397		17 021		42 670		7 568 688	

Table 2. Crude and age-standardised prevalence rates (PR) for reporting long-term health conditions for current-serving, former-serving and never-serving persons.

Service	Crude PR per 10 000 population (95% CI)	% change in PR with age standardisation	Age-standardised PR per 10 000 population (95% CI)
Current serving	1 837 (1 811–1 864)	12%	2 061 (2 031–2 099)
Former serving	4 032 (4 012–4 053)	-22%	3 159 (3 123–3 195)
Never serving	2 705 (2 702–2 707)	-3%	2 623 (2 621–2 626)



ratio tests. All analyses were performed using R software (version 4.2.3). The 'epitools' package (<https://CRAN.R-project.org/package=epitools>) was used for direct age standardisation, and the 'MASS' package (<https://CRAN.R-project.org/package=MASS>) was used for the negative binomial regression.

Results

Compared with never-serving persons, the crude prevalence of reporting ≥ 1 LTHC were 49% higher among former-serving persons and 32% lower among current-serving persons. After applying direct age standardisation, the prevalence of reporting ≥ 1 LTHC remained higher among former-serving persons (21%) than among current-serving persons (20%) compared with never-serving persons.

Controlling for age and service in the regression, we found that females had a higher prevalence of reporting LTHC than males (PRR 1.21, 95%CI 1.16–1.27). When sex and service were controlled, we found that older age was strongly associated with LTHC, such that 60–64 year olds had a higher prevalence of reporting LTHC (PRR 2.41, 95%CI 2.17–2.68) than 15–19 year olds (see Figure 1). It is important to note that while the Census reports data for the 15–19-year age group, the ADF's age requirement for entry is 17; therefore, this likely captures only ADF members aged 17–19. When controlling for age and sex, the differences between services remained. Compared with never-serving persons, current-serving persons had a lower prevalence of reporting LTHC (PRR 0.79, 95%CI 0.66–0.94), whereas former-serving persons had a higher prevalence (PRR 1.33, 95%CI 1.27–1.39).

Discussion

Our study sought to address considerations raised in previous analyses by applying direct age standardisation and distinguishing between current- and former-serving ADF persons. We observed three key findings. First, compared with those who have never served, the crude PR of self-reporting a LTHC was lower among current-serving persons and higher among former-serving persons. Second, the observed differences persisted after age standardisation, but their magnitude decreased across all comparisons, underscoring the importance of controlling for age when comparing veteran to never-serving populations. Third, being older, female and former-serving was associated with a higher rate of reporting LTHC.

Several factors may help explain the lower prevalence of LTHC among current- versus never-

serving persons. These include: 1) selection bias during enlistment, whereby recruitment standards select for healthy persons; 2) protective factors when in service, whereby full-time members maintain a high level of health and regularly access funded healthcare services through Defence; or 3) potential underreporting due to lower levels of healthcare seeking or fear of career implications. In contrast, the prevalence of LTHC in former-serving versus never-serving persons may reflect both service-related and non-service-related health conditions. Some former service members may have left the service due to health issues. In contrast, others may be more aware of, or more likely to report, health conditions due to regular or continued contact with the healthcare system during or after service.

It is challenging to determine the extent to which these conditions are directly attributable to exposure during service, given the multifactorial nature of many chronic illnesses. Nonetheless, evidence suggests the ADF has a higher incidence of serious medical claims compared to the general population, and in 2015, 61% of former-serving persons accessed care through the Department of Veterans' Affairs for service-related conditions.¹⁰ The prevalence of self-reporting LTHC in the context of accessing insurance or benefit-driven healthcare is important because there exists an association between undergoing a claims process and poorer health outcomes¹⁰. While previous research has indicated that exposure to conflict is a likely factor in future LTHC for Vietnam veterans,³ our analysis only included persons aged between 15 and 64 years, thereby likely excluding most, if not all, members who would have served in Vietnam.

Our findings are based on the Census, which provides near-complete population coverage, with a non-response rate of only 6% to the service question (<https://www.abs.gov.au/census/find-census-data/quickstats/2021/AUS>). While this enhances generalisability, several limitations should be acknowledged. First, health conditions were self-reported; these findings are only estimates of LTHC prevalence. Further research is warranted to confirm these findings and identify the driving factors of the observed differences. Second, the Census question on ADF service did not distinguish between service branches (Army, Navy, Air Force), precluding any analysis of variation in health outcomes by branch. Future research should allow for disaggregating by service branches.

Despite these limitations, our findings reinforce the importance of distinguishing between, and controlling for the age of, current- and former-serving

populations when assessing veterans' health. These groups differ significantly in age, service experience and access to health services. Future research that does not account for service status or control for age risks may draw misleading conclusions about the health burden faced by ADF personnel. We recommend that future studies further disaggregate veteran populations—by branch, service length and exposure—and explore causal pathways using longitudinal or linked administrative data.

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Corresponding Author: Richard Colin Beaton,
richiebeaton@gmail.com

*Authors: R C Beaton¹, G McLeod², S Al-Janabi¹,
C F Finch³*

Author Affiliations:

1 Joint Health Command

2 Edith Cowan University School of Science

3 Edith Cowan University

References

1. GBD 2019 Australia Collaborators. The burden and trend of diseases and their risk factors in Australia, 1990-2019. *The Lancet Public Health*. 2023;8(8):e585-e99.
2. Australian Institute of Health and Welfare. Chronic conditions and multimorbidity. AIHW; 2023. Available from: <https://www.aihw.gov.au/reports/australias-health/chronic-conditions-and-multimorbidity>
3. O'Toole BI, Catts SV, Outram S, Pierse KR, Cockburn J. The physical and mental health of Australian Vietnam veterans 3 decades after the war and its relation to military service, combat, and post-traumatic stress disorder. *American Journal of Epidemiology*. 2009;170.
4. Australian Institute of Health and Welfare. Health of veterans Canberra 2023 [updated 24 June 2023; Accessed 18 Aug 2023]. Available from: <https://www.aihw.gov.au/reports/veterans/health-of-veterans>
5. Clarke PM, Gregory R, Saloman J. Long-term disability associated with war-related experience among Vietnam veterans: retrospective cohort study. *Med Care*. 2022;53(5).
6. Australian Bureau of Statistics. Australian Defence Force service 2022 [updated 29/06/2022; Accessed 18 Aug 2023]. Available from: <https://www.abs.gov.au/articles/australian-defence-force-service>
7. Australian Bureau of Statistics. Long-term health conditions: information on long-term health conditions. [accessed Dec 2022]. Available from: <https://www.abs.gov.au/statistics/health/health-conditions-and-risks/health-conditions-prevalence/latest-release>
8. Australian Bureau of Statistics. Confidentiality and relative standard error 2021 [Accessed Aug 2023]. Available from: <https://www.abs.gov.au/statistics/microdata-tablebuilder/tablebuilder/confidentiality-and-relative-standard-error>
9. Australian Institute of Health and Welfare, METEOR Metadata Online Registry. Age-standardisation rate 2005 [Accessed 18 Aug 2023]. Available from: <https://meteor.aihw.gov.au/content/327276-:~:text=A%20method%20of%20adjusting%20the,and%20Territories%2C%20Indigenous%20and%20non%2D2023>
10. The Australasian Faculty of Occupational Medicine, The Royal Australasian College of Physicians, Health Policy Unit. Compensable Injuries and Health Outcomes. 2001. Available from: <https://www.racp.edu.au/docs/default-source/advocacy-library/compensable-injuries-and-health-outcomes.pdf>

From Battle to Balance: Fletching, Meaning-Making, and Veteran Recovery

M Murawski

Abstract

This commentary reflects on the ancient craft of fletching as a personally meaningful practice that supports recovery and reintegration following military service. Drawing on lived experience, the essay situates fletching within broader conversations in veteran studies concerning identity loss, moral injury and the limits of exclusively verbal or clinical approaches to healing. Rather than presenting an evaluated intervention or generalisable findings, the essay offers an informed argument grounded in scholarship from art therapy, somatic psychology, symbolic meaning-making and veteran identity reconstruction. Fletching is examined as a practice that engages the body, focuses attention and reshapes martial symbolism into a constructive and reflective process rooted in discipline, restraint and historical tradition. Unlike many contemporary craft practices, fletching carries a direct connection to longstanding martial lineages and traditions of skilled service, allowing veterans to reconnect with aspects of military identity without dependence on combat or operational roles. By integrating personal reflection with interdisciplinary literature, this essay invites scholars, practitioners and advocates in veteran studies to consider how embodied, craft-based practices may complement existing approaches to veteran wellbeing, moral repair and reintegration.

Introduction

For many veterans, the transition from military service to civilian life involves more than a change in occupation or routine. It often requires renegotiating identity, purpose, and moral meaning in the absence of the structures that once provided clarity and a sense of belonging. Although post-traumatic stress disorder frameworks have helped legitimise veterans' psychological struggles, they do not fully capture broader disruptions such as moral injury, identity fragmentation and the loss of meaning and moral stability that can follow military service.¹⁻⁴ Military identity is frequently embodied through discipline, routine, and skilled practice and trauma-focused treatments may be less effective in addressing the guilt, shame and disrupted meaning commonly associated with moral injury.^{1,3} These limitations point to the value of approaches that extend beyond symptom-focused, talk-based care alone.

This commentary emerges from personal experience with these challenges and from reflection on an unexpected source of stability during recovery: the traditional craft of fletching, or arrow-making. Engagement in this practice provides a structured, tactile and symbolically meaningful way to reconnect with focus, patience and purpose. Unlike many contemporary craft practices, fletching carries a

direct connection to longstanding martial traditions rooted in discipline, restraint and skilled service. While fletching is not presented as a treatment or evaluated therapeutic intervention, it functions as a process through which embodied attention, historical continuity and creative intent support psychological balance and self-understanding.

Rather than reporting outcomes or proposing a formal program, this *Voices* essay offers an informed argument grounded in lived experience and interdisciplinary scholarship. It examines how hands-on, meaning-rich craft practices may support identity reconstruction and moral repair alongside existing clinical and community-based supports. The author is a military veteran with professional and academic experience in criminal justice and veteran studies whose post-service recovery includes sustained engagement with traditional craft practices. This essay reflects both personal experience and scholarly inquiry into nonclinical pathways for veteran meaning-making, ethical restoration and reintegration.

Embodied craft, symbolic meaning and identity repair

Fletching engages the body in deliberate, repetitive action that requires attention, precision and patience.

This form of embodied engagement differs from approaches that rely primarily on verbal narration or cognitive processing. Research in somatic and art-based practices suggests that structured physical activity can support emotional regulation by anchoring attention in the present moment and re-establishing a sense of control through skilled movement.⁵⁻⁷ For veterans accustomed to physical discipline and procedural competence, such engagement often feels familiar rather than clinical, potentially reducing resistance to participation.

Beyond its physical demands, fletching carries symbolic meaning that supports identity reconstruction. The craft transforms raw materials into a functional object through restraint, care and intention. This process mirrors aspects of military skill development, where discipline, responsibility and competence are central to identity formation. Symbolic and transition-focused scholarship suggests that meaning is often restored through action rather than reflection alone, particularly when activities embody continuity across life stages and reinforce a stable sense of self.^{2,4} In this context, fletching offers a nonverbal means of reconnecting with usefulness, order and ethical purpose without re-enacting violence or operational stress.

Unlike many contemporary craft-based activities used in therapeutic or recreational settings, fletching also carries direct historical associations with martial tradition, collective responsibility and disciplined service. The craft is historically grounded in the Worshipful Company of Fletchers,⁸ one of London's traditional livery companies, with origins in national defence and martial readiness. While membership in the Company is neither necessary nor expected for participation in the craft, its historical presence provides an important symbolic framework. As a guild, the Fletchers represent more than technical skill; they embody shared standards, identity, discipline and responsibility within a recognised warrior tradition. For veterans experiencing post-service identity disruption, engagement with a craft rooted in an established martial lineage may offer symbolic continuity without relying on rank, command or combat identity. The guild framework situates fletching not merely as a solitary hobby but as participation in a disciplined tradition emphasising restraint, craftsmanship and service.

Importantly, the value of this practice lies not in distraction or avoidance but in intentional engagement with a task that demands presence and accountability. The completed arrow represents continuity of skill and purpose rather than nostalgia for combat or operational experience.

This distinction is particularly important given that veterans experiencing moral injury often struggle less with fear-based symptomatology than with guilt, shame, betrayal and disrupted meaning.^{1,3} Practices that reaffirm competence, ethical restraint, and constructive purpose may therefore complement clinical approaches by addressing dimensions of injury that are often difficult to articulate verbally.

At the same time, martial symbolism may not resonate uniformly across all veterans. For some individuals, engagement with military-associated imagery or traditions could reinforce distressing memories or identities connected to combat experience. However, the symbolic framing of fletching differs from that of practices centred on aggression or re-enactment. The emphasis is placed on patience, discipline, craftsmanship and measured control rather than combat performance itself. In this way, the craft may provide some veterans with a means to reshape their martial identity into a constructive, reflective form rooted in restraint rather than violence.

This perspective aligns with scholarship on veteran transition that emphasises identity reconstruction and meaning-making rather than symptom reduction alone. Embodied, meaning-rich practices may function as stabilising anchors during transition by offering structure, discipline, continuity of self and opportunities for moral and personal reflection.

The art of fletching

Fletching is a craft that requires skill, attention, patience and respect for materials. The process begins by preparing the shaft, typically a wooden dowel, which must be inspected, straightened and sanded. This stage emphasises balance and alignment, as even minor imperfections affect the integrity of the finished arrow. Sustained focus on fine details encourages a slower, more deliberate pace, in contrast to the hypervigilance and urgency that can accompany post-service stress and difficulty adjusting to civilian life.

The binding of feathers introduces a different form of engagement. Selecting feathers, determining orientation and spacing them evenly around the shaft require calm repetition and precision. Historically, proper fletching has been essential for stable flight and accuracy, underscoring the importance of careful craftsmanship and disciplined technique.⁹ In practice, this stage fosters rhythmic movement and bilateral coordination. Repetitive handling of materials creates a steady cadence that supports present moment awareness and reduces cognitive rumination, consistent with findings that hands-on

activities can aid emotional regulation in trauma-exposed populations.¹⁰

Binding the feathers to the shaft is an especially tactile phase of the craft. Whether using thread, sinew or modern materials, this step requires controlled pressure and steady hands. Errors are immediately visible and must be corrected in real time, creating a direct feedback loop between action and outcome. This immediacy reinforces a sense of agency and competence that can be difficult to access through abstract reflection alone. Such bodily engagement aligns with somatic approaches to trauma recovery, which emphasise physical interaction as a pathway to regulation and integration.¹¹

Sensory input plays a central role throughout the process. The texture of wood under sandpaper, the resistance of binding material, and the visual symmetry of aligned feathers anchor attention in the present. Trauma research suggests that sensory engagement can counter dissociation by strengthening awareness of bodily sensation and environmental cues.¹² Unlike many modern activities dominated by rapid digital stimulation, fletching requires sustained physical attention and direct interaction with materials, thereby reinforcing a slower, more grounded mode of engagement.

Completion of an arrow provides tangible closure. The finished object reflects time, care and intention invested across multiple stages and can be held, examined and revisited. Unlike many therapeutic exercises, the result is durable rather than ephemeral. Craft-based practices that culminate in a completed object have been shown to support self-efficacy and perceived competence, particularly during periods of recovery or identity transition.¹³ For some veterans, the completed arrow may also symbolise continuity between past and present identities by transforming martial skill and discipline into a constructive, reflective practice rather than one centred on operational function or combat readiness.

Taken together, the craft of fletching illustrates how structured manual activity can support focus, regulation and grounded presence through action rather than explanation. This section does not suggest that the craft itself constitutes therapy or that it is universally beneficial for all veterans. Rather, it helps clarify why the sensory, symbolic and procedural qualities of fletching may create conditions conducive to reflection, stability and meaning-making alongside broader clinical and community-based supports.

Conclusion

Recovery after military service often requires veterans to renegotiate identity, purpose and moral meaning in ways that are not easily addressed through clinical language alone. While evidence-based therapies remain essential, they do not exhaust the range of practices through which healing, moral repair and reintegration may occur. This essay reflects on fletching as one such practice, not as a treatment or validated intervention, but as a personally meaningful activity that may support balance, focus, continuity of self and renewed engagement with purpose following service.

By engaging the body through skilled physical activity, fletching presents a structured way to focus attention, regulate emotion and reconnect with competence through action rather than explanation. Its symbolic resonance allows martial values such as discipline, precision, restraint and responsibility to be retained and reshaped rather than discarded. In this way, the craft functions as a bridge between past and present identities, supporting reflection without requiring confrontation or extensive narrative disclosure. For some veterans, this process may also provide a constructive means of addressing the disrupted meaning, guilt and loss of moral stability associated with moral injury by redirecting martial identity towards craftsmanship, patience and intentional creation rather than operational function alone. These qualities align with scholarship in veteran studies that emphasises dignity, affiliation, meaning and continuity of identity as central to recovery and reintegration.^{2,14}

This reflection does not suggest that fletching is universally applicable or sufficient on its own. Veterans differ widely in their experiences, backgrounds, and responses to symbolic practices, and no single approach will resonate with all individuals. For some veterans, martial symbolism may be unhelpful or emotionally difficult rather than restorative. Nevertheless, the broader implication is that embodied, skill-based traditions may offer some veterans accessible pathways towards regulation, reflection and identity reconstruction that complement clinical and community-based supports. By taking lived experience seriously while remaining grounded in scholarship, veteran studies can continue to expand how recovery, moral injury, identity and reintegration are understood beyond exclusively formal therapeutic settings.

*Corresponding Author: Mark Murawski,
mmurawski@yahoo.com
Authors: M Murawski*

References

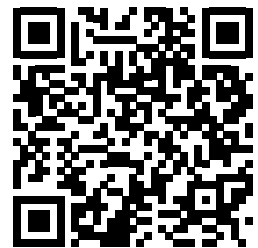
1. Bonson A, Murphy D, Aldridge V, Greenberg N, Williamson V. Veterans' experiences of moral injury, treatment and recommendations for future support. *BMJ Military Health*. 2024;170:e104-e109. <https://doi.org/10.1136/military-2022-002332>
2. Grimell J. A symbolic interactionist perspective on the divide within the veteran self. *J Veterans Stud*. 2023;9(1):46-59. <https://doi.org/10.21061/jvs.v9i1.392>
3. Koenig HG, Al Zaben F. Moral injury: An increasingly recognized and widespread syndrome. *J Relig Health*. 2021;60(5):2989-3011. <https://doi.org/10.1007/s10943-021-01328-0>
4. Sachdev S, Dixit S. Military to civilian cultural transition experiences of retired military personnel: A systematic meta-synthesis. *Mil Psychol*. 2023;36(6):1-14. <https://doi.org/10.1080/08995605.2023.2237835>
5. Christopher G. Healing trauma and building empathy through art therapy. *Int J Art Therapy*. 2024;29(4):1-2. <https://doi.org/10.1080/17454832.2024.2418226>
6. Kuhfuß M, Maldei T, Hetmanek A, Baumann N. Somatic experiencing – effectiveness and key factors of a body-oriented trauma therapy: A scoping literature review. *Euro J Psychotraum*. 2021;12(1):1-17. <https://doi.org/10.1080/20008198.2021.1929023>
7. Martín-Rodríguez A, Gostian-Ropotin LA, Beltrán-Velasco AI, et al. Sporting mind: The interplay of physical activity and psychological health. *Sports*. 2024;12(1):37. <https://doi.org/10.3390/sports12010037>
8. Worshipful Company of Fletchers - Fletchers 650. 2022. Available from: <https://www.fletchers.org.uk/index.php/histor>
9. Lepers C, Rots V. The important role of bow choice and arrow fletching in projectile experimentation. A ballistic approach. *J Archaeol Sci Rep*. 2020;34:102613. <https://doi.org/10.1016/j.jasrep.2020.102613>
10. Bukhave EB, Creek J, Linstad AK, Frandsen TF. The effects of crafts-based interventions on mental health and well-being: A systematic review. *Aus Occupat Ther J*. 2025;72:(1). <https://doi.org/10.1111/1440-1630.70001>
11. Ahlers AL. The impact of trauma on the brain and body: Alternative approaches to treatment. JMU Scholarly Commons. 2020. Available from: https://commons.lib.jmu.edu/edspec202029/16/?utm_source=commons.lib.jmu.edu%2Fe
12. Biernacka N, Talwar S, Billings J. Trauma clinicians' views of physical exercise as part of PTSD and complex PTSD treatment: A qualitative study. *PLOS Mental Health*. 2024;1(4):e0000114-e0000114. <https://doi.org/10.1371/journal.pmen.0000114>
13. Korndörffer L, White C, Mackelprang JL. Psychological first aid principles within a community-led, arts initiative: Lessons from the blacksmiths' tree. *Disasters*. 2022;47(3). <https://doi.org/10.1111/disa.12564>
14. Berring LL, Holm T, Hansen JP, Delcomyn CL, Søndergaard R, Hvidhjelm J. Implementing trauma-informed care—settings, definitions, interventions, measures, and implementation across settings: A scoping review. *Healthcare*. 2024;12(9):1-26. <https://doi.org/10.3390/healthcare12090908>



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A Mixed-Methods Assessment of War-Related Abuses in Ukraine since 2014

Professor Lynn Lieberman Lawry^{1,3},
Dr Bharathi Radhakrishnan², Dr Kimberly T Johnson-Boua¹, Ms Vivitha Mani^{2,3}, Dr Olena Nesterova⁴, Dr Olga Gvozdetzka⁴, Dr Dmytro Martsenkovskyi^{5,6}, Dr Anastasiia Bibikova⁶, Ms Christine Dahl⁷, Dr Jana Asher⁸

- 1 Uniformed Services University of the Health Sciences, Bethesda, United States,
- 2 The Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc, Bethesda, United States
- 3 Center for Health Services Research, Bethesda, United States
- 4 Center for Public Health of the Ministry of Health of Ukraine, Kyiv, Ukraine
- 5 Bogomolets National Medical University, Kyiv, Ukraine, 6Scientific and Medical Center "DOSLID", Kyiv, Ukraine, 7International Criminal Tribunal for the former Yugoslavia, The Hague, Netherlands, 8Statistical Consultant, Pittsburgh, United States

Biography:

Dr Lieberman Lawry is a physician, epidemiologist, and biostatistician more than three decades of experience in humanitarian aid, disaster response, development, and research. She spent 20 years as faculty at Brigham and Women's Hospital, Harvard Medical School, with concurrent appointments with the Department of International Health, Bloomberg School of Public Health, Johns Hopkins and Uniformed Services where she is currently a Professor of Preventive Medicine and Biostatistics. She has extensive experience in dozens of countries coordinating aid, facilitating development, and conducting population-based studies in conflict and post-conflict settings. Her studies elucidate the needs of populations regarding human rights, healthcare access, mental health, and conflict-related sexual violence among many other public health topics - utilizing these data to improve policy to address global health needs in conflict. Her current focus is trauma system assessments in large-scale combat for understanding needs and gaps for preparedness. She is currently finishing a nationally-representative study of war-related abuses and mental health consequences in Ukraine. In addition to teaching at USUHS, she developed interactive courses for international militaries who serve as Peacekeepers in 48 countries on preventing sexual exploitation and abuse and CRSV and as global health engagements for security cooperation in the human security space.

Background

The February 2022 Russian Federation invasion of Ukraine, following the conflict initiated in 2014, resulted in massive casualties, widespread destruction of civilian infrastructure, and a humanitarian crisis. Numerous violations of international humanitarian law occurred, including indiscriminate shelling, systematic torture, and conflict-related sexual violence (CRSV), suggesting possible war crimes and crimes against humanity (WCCA). This study explores the experiences of Ukrainian veterans and former Prisoners of War (POWs) since 2014 to systematically document reported abuses and inform accountability and future justice processes.

Methods

A mixed-methods design combined a thematic analysis of semi-structured key informant interviews (KIIs) with quantitative descriptors. Forty Ukrainian veterans and former POWs (20 male, 20 female) from the 2014 and 2022 invasions were interviewed between August and November 2025. The KII instrument contained 32 open-ended questions covering demographics, abuses, psychological impact, and justice. Qualitative data analysis involved deductive thematic content analysis using NVivo 15; four researchers independently coded and achieved consensus. Verbal consent was obtained, and the study received ethical approval from Ukrainian and U.S. institutions.

Results

Participants reported numerous abuses consistent with WCCA including attacks on civilian infrastructure (healthcare, education, residential, energy); systemic torture, beatings, electrocution, starvation, denied medical care, deliberate targeting of Ukrainian nationality, unlawful killings of civilians and hors de combat; and CRSV targeting both male and female captives and civilians. Internally, female veterans reported facing discrimination, restrictive roles, and military sexual assault. Trauma symptoms, including Post-Traumatic Stress Disorder (PTSD), anxiety, depression, sleep disturbances, and moral injury, were cited as major consequences of the wars.

Conclusions: Abuses appear deliberate, widespread, and consistent with WCCA. Psychosocial barriers undermine protection and prevention efforts for justice. Stigma, particularly for male survivors of CRSV, and fear of harming loved ones still in captivity obstruct evidence-gathering and truth-telling. The reporting of severe trauma symptomatology necessitates an immediate humanitarian response that prioritizes the recovery of veterans and former POWs through structured, accessible, long-term

psychological and psychiatric services. Beyond formal psychiatric diagnoses, participants expressed strong feelings of grief and symptoms consistent with moral injury, stemming from the psychological and emotional turmoil of witnessing the torture, injury, and death of fellow comrades and civilians. Among Ukrainian military personnel, sleep disorders and anger may reflect moral injury, which overlaps with PTSD and has been identified as a major contributor to PTSD among Ukrainian forces. These findings highlight the severity of detention conditions during the war with Russia, particularly torture. Such treatment may constitute “willfully causing great suffering or serious injury to body or health” under Article 8 and its health consequences may provide clinical evidence supporting legal determinations of war crimes. Restrictive roles, discrimination, and military sexual assault reveal a need to establish mechanisms that combat internal sexual violence and reinforce professional military hierarchy.

A Qualitative Assessment of Trauma and Rehabilitation Systems in Sweden for Large-Scale Combat Operation (LSCO) Preparedness

Professor Lynn Lieberman Lawry^{1,6}, Dr Mary F Stuever², Dr Yohan Robinson³, Dr Jonas Zimmerman^{3,4}, Mr Viktor Glantz^{3,4}, Dr Bharathi Radhakrishnan⁵, Ms Vivitha Mani^{5,6}, Dr George Smolinski¹

¹ *USUHS, United States*

² *Landstuhl Regional Medical Center, Landstuhl, Germany*

³ *University of Gothenburg, Centre for Disaster Medicine, Gothenburg, Sweden*

⁴ *Sahlgrenska University Hospital, Gothenburg, Sweden*

⁵ *The Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc, Bethesda, United States*

⁶ *Center for Health Services Research, Bethesda, Bethesda, United States*

Biography:

Dr Lieberman Lawry is a physician, epidemiologist, and biostatistician more than three decades of experience in humanitarian aid, disaster response, development, and research. She spent 20 years as faculty at Brigham and Women's Hospital, Harvard Medical School, with concurrent appointments with the Department of International Health, Bloomberg School of Public Health, Johns Hopkins and Uniformed Services where she is currently a Professor of Preventive Medicine and Biostatistics. She has extensive

experience in dozens of countries coordinating aid, facilitating development, and conducting population-based studies in conflict and post-conflict settings. Her studies elucidate the needs of populations regarding human rights, healthcare access, mental health, and conflict-related sexual violence among many other public health topics - utilizing these data to improve policy to address global health needs in conflict. Her current focus is trauma system assessments in large-scale combat for understanding needs and gaps for preparedness. She is currently finishing a nationally-representative study of war-related abuses and mental health consequences in Ukraine. In addition to teaching at USUHS, she developed interactive courses for international militaries who serve as Peacekeepers in 48 countries on preventing sexual exploitation and abuse and CRSV and as global health engagements for security cooperation in the human security space.

Background

The 2022 Russian Federation invasion of Ukraine spurred unprecedented geopolitical changes including Sweden's accession to NATO with a focus on preparedness across NATO countries.

Methods

We conducted semi-structured key informant interviews of Swedish healthcare providers working in the trauma and rehabilitation services across Sweden's trauma centers and smaller hospitals to obtain detailed descriptions of experiences, gaps and needs for armed conflict preparedness. We adapted the Ukraine Trauma System Assessment Tool to include more in-depth assessments of rehabilitation and cold weather operations. The resultant Nordic Trauma System and Rehabilitation Assessment Tool evaluates trauma and rehabilitation systems by assessing the functional capacity of trauma and rehabilitation system domains and preparedness for LSCO. Deductive thematic content analysis was used to identify patterns or themes using NVivo and open coding techniques

Results

Sweden has a robust, advanced healthcare system that is highly capable. However, its surge capacity is lacking which will pose tremendous challenges in LSCO. Preparedness plans in Sweden are restricted access, which is understandable from an Operational Security perspective but nevertheless limits information flow. Many of the smaller hospitals will be overwhelmed by more than three patients. Integrated civilian and military exercises are few as is field practice in LSCO-type environments. Sweden has instituted preparedness training such as “Stop the Bleed” for the civilian population. There is need

for lay provider training such as Disaster Rescue and First Aid Training as well as tourniquet training. Highly specialized surgeons would benefit from training on battlefield medical guidelines developed to reduce preventable deaths in combat such as ASSET and TCCC. The rehabilitation system is poorly integrated throughout the trauma continuum and is largely separate from inpatient acute medical care. The wait for rehabilitation beds (Traumatic Brain Injury and Spinal Cord Injury) is problematic in multiple regions and will be an important factor in modern warfare LSCO.

Conclusions: Sweden struggles in its transformation from a healthcare system with trauma care capability optimized for peacetime, to a system with surge capacity meeting the needs in LSCO. Change in Sweden during the upcoming decades should emanate from the national agencies that welcomes local and regional innovative initiatives.

Addressing Brain Injury Risk in the Australian Defence Force: An Integrated, Evidence Based Approach to Prevention, Monitoring, and Care

Dr Antony Sutherland¹, Dr Kurt Mudie²,
Dr Jemma Coleman², Dr Zoe Jenkins³

¹ Army HQ, Canberra, Australia

² Defence Science and Technology Group, Sydney, Australia

³ Joint Health Command - Directorate of Health Research, Canberra, Australia

Biography:

LTCOL Antony Sutherland is a neurologist with expertise in cognitive neurology, traumatic brain injury and operational brain health. He has held senior medical leadership roles including supporting Special Operations Command as the former Senior Medical Officer.

LTCOL Sutherland is involved in the development and implementation of brain injury monitoring and surveillance programs for military personnel, with a focus on the neurological effects of repetitive low-level blast exposure. He is the clinical lead for the Australian Defence Force Blast Overpressure Monitoring Study which is looking at the neurophysiological impacts of repetitive low level blast in occupational training.

His broader interests include dementia and other cognitive syndromes, military neurotrauma and brain health policy. LTCOL Sutherland has presented

nationally and internationally on operational brain health and contributes to collaborative research initiatives with Defence and academic partners. He is committed to improving early detection, prevention and long-term management of neurological conditions in both military and civilian populations.

Military occupational brain injury, including blast related and non blast related mechanisms, represents a complex and evolving challenge for modern armed forces. In response to Recommendation 61 of the Australian Royal Commission into Defence and Veteran Suicide, the Australian Defence Force (ADF) has implemented a comprehensive, system wide program to better understand, prevent, monitor, and manage brain injury risk across training and operations.

This presentation outlines the ADF's integrated approach, governed through a senior 1 Star Steering Group and structured using a risk bowtie methodology to align preventative and restorative controls. The framework provides a transparent mechanism for assessing control effectiveness, identifying gaps, and ensuring accountability across multiple Lines of Effort, including engineering controls, training systems, health services, and policy reform.

On the prevention and monitoring side, the ADF has established a phased Blast Overpressure Monitoring Program in partnership with Defence Science and Technology Group (DSTG), Land Engineering Agency, and academic collaborators. Phase 1 trials within Special Operations Command have provided foundational exposure data and methodological lessons, while Phase 2 has expanded baseline data collection into conventional forces. Monitoring is supported by refined system configuration controls, weapon specific exposure testing, range design considerations, and evolving daily and cumulative exposure limits. Emerging findings challenge traditional assumptions, including the relationship between proximity and exposure, the role of acoustics versus blast pressure, and the limitations of fixed "safe" thresholds in the context of repetitive exposure.

In parallel, the ADF is progressing concussion prevention and management reforms across physical training, sport, and operational environments. These include embedded health professionals at training establishments, development of pragmatic screening and self reporting mechanisms, exploration of wearable and instrumented monitoring technologies, and alignment with conditioning models to balance readiness with injury risk.

Training, doctrine, and education are being updated to embed brain injury risk awareness into

Army learning systems, supported by revised land publications, e-learning packages, and strategic communications aimed at improving transparency and workforce confidence. Importantly, the ADF is also addressing complex training scenarios involving multiple weapon systems in a single day, with ongoing work to determine when modelling, restriction, or targeted monitoring is most appropriate.

From a clinical perspective, the ADF is strengthening health system integration and care pathways through multidisciplinary approaches informed by international best practice. Engagement with United States and United Kingdom partners has highlighted the importance of coordinated rehabilitation, advances in neuroimaging and biomarkers, and the limitations of existing cognitive testing platforms. These insights are shaping future ADF traumatic brain injury assessment and management models.

International collaboration underpins the program, with Australia actively contributing to NATO Human Factors and Medicine initiatives, including HFM 338 and HFM 441, and engaging across Five Eyes partners to harmonise research methods and data standards.

Collectively, this work represents a shift from fragmented, reactive responses toward a coherent, evidence based system designed to protect brain health while sustaining military capability. The ADF experience offers a practical model for other militaries seeking to address brain injury risk across prevention, monitoring, and care in an operationally realistic manner.

ADF Medical Reporting Standardisation for Interoperable C2 in Combined Joint Operations - Lessons from the CJTMC

CAPT Luke Dekkers¹

¹ Australian Army, Enoggera, Australia

Biography:

CAPT Luke Dekkers is the Second-in-Command of C Company, 2nd Health Battalion, where he supports the command, readiness, and tactical employment of Close and General health capabilities in land force operations. His professional experience is anchored in the planning and execution of Close Health support, underpinned by a strong focus on medical command-and-control problem sets.

He holds a Bachelor of Arts, a Bachelor of Science, and a Postgraduate Diploma of Education. He is currently

undertaking a Master of National Security Policy, enhancing his understanding of Australia's strategic environment and the interoperability requirements of joint and coalition operations.

CAPT Dekkers' presentation, "ADF Medical Reporting Standardisation for Interoperable C2 in Combined Joint Operations - Lessons from the CJTMC," highlights the need for a unified medical reporting framework in the ADF and proposes a scalable approach to improving medical situational awareness, doctrinal convergence, and health command and control in multi-national operational settings.

Background

EXERCISE TALISMAN SABRE 2025 (TS25) exposed a gap in ADF medical C2, the absence of a standardised, doctrinally aligned, joint reporting tool for deployed health elements. During integration with the US 18th Theatre Medical Command and partner-nation staff, the CJTMC encountered unnecessary friction from inconsistent terminology and organisational unfamiliarity with required reporting lines. This delayed establishment of the CJTMC's operational picture within the Combined Joint Force Area of Operations and reduced information fidelity. Critically, the ADF lacks a formalised, doctrinally-directed tactical-to-operational medical return. This forces reporting frameworks to be individually constructed through activity-specific Health Support Orders, an approach that contributed directly to the difficulties observed during TS25.

Aim

This work proposes a technically robust ADF Medical Situation Report (MEDREP) as a standardised and doctrinally aligned reporting framework. The MEDREP is designed to meet CJTMC's information requirements, support rapid operationalisation of Joint Health Command (JHC), and ensure doctrinal convergence with US INDOPACOM and NATO counterparts. The aim is not to describe an implemented tool, but to demonstrate the operational necessity and technical viability of institutionalising one.

Methods

The CJTMC Operations Cell, in collaboration with 18th TMC, developed the MEDREP concept using NATO doctrine as reference standards, enabling harmonisation of medical terminology, patient categorisation, and evacuation classification across coalition partners. The resulting construct is a 10-line reporting pro forma optimised for:

- (1) Scalability
- (2) Transmission flexibility

- (3) Interoperability with the CJTMC Medical Common Operating Picture (MEDCOP)
- (4) Alignment with NATO health surveillance methodology

Each line was weighted against a criticality index developed by the CJTMC to ensure the most time-sensitive information (e.g., capability, evacuation readiness, resource viability) can be reported first.

Technical Design Features

The MEDREP consolidates critical metrics into a unified architecture encapsulating:

- (1) Evacuation capabilities
- (2) Medical logistics
- (3) Bed availability
- (4) Epidemiological reporting
- (5) Command inputs

The design will support analogue (A5 print form) and digital delivery, enabling future integration with NATO-standardised platforms or ADF digital health systems.

Results / Operational Impact

The proposed MEDREP is assessed to significantly reduce reporting friction, increase accuracy of health intelligence inputs, and improve the CJTMC's ability to rapidly build their MEDCOP with minimal data transformation. Its adoption would support:

- (1) Harmonised reporting across ADF, US INDOPACOM, and NATO PNs.
- (2) Improved medical C2 through standardised, comparable data inputs.
- (3) Significantly enhanced surveillance from forward Role 1 elements.
- (4) Accelerated establishment of CJTMC operational awareness in future activations.

Conclusion

The ADF's lack of a standardised medical reporting mechanism represents a capability gap in combined joint operations. The MEDREP concept provides a technically sound, doctrinally consistent solution that enables interoperability, strengthens force health protection and medical C2, and addresses intelligence gaps identified during TS25. Its formal adoption across single-service and joint activities would embed an enduring, interoperable, coalition-aligned reporting framework essential for future ADF deployments.

Agility In Action: Transforming Air Force Role 2 Capability for the Future Fight

Dr Ajitha Naidu Sugnanam¹

1 Royal Australian Air Force, Amberley, Australia

Biography:

Wing Commander Ajitha Naidu Sugnanam

WGCDR Ajitha Naidu Sugnanam is currently the Commanding Officer of No. 1 Expeditionary Health Squadron. A qualified general dentist with further studies in oral surgery, she joined the Royal Australian Air Force in 2010 and has held postings across Joint and Air Force units including Amberley, Darwin, Tindal, Newcastle, and Canberra. Her career has evolved from predominantly clinical practice to leadership and staff officer roles, including appointments as Health Operations Staff Officer, Staff Officer Capability Development, Staff Officer at the Defence Response Unit, and Staff Officer within the Health Policy and Protection Directorate. She is a graduate of the Australian Command and Staff College (2022).

WGCDR Sugnanam has contributed to humanitarian missions such as the Army Aboriginal Community Assistance Program (AACAP) and Pacific Angel, and has deployed on Operation HIGHROAD and Operation ACCORDION.

She is deeply committed to equitable healthcare access, inspiring her to establish and continue leading the Esession Foundation as Chief Executive Officer; a non-profit organisation that has delivered healthcare and education initiatives to approximately 30,000 underserved people across Australia and 13 other countries over the past 16 years.

Serving as Commanding Officer of No. 1 Expeditionary Health Squadron provides a unique vantage point to understand both the strategic imperatives of preparedness and the practical complexities of delivering Role 2 health capability. This extends to the precision required to generate and deploy capability, exemplified through detailed air platform load configurations, where sequencing and execution are meticulously planned and delivered down to the minute to ensure operational success.

This presentation explores the evolution of No. 1 Expeditionary Health Squadron as the ADF's most agile Role 2 capability; a resuscitative surgical capability designed with a scalable and sustainable model to meet future operational demands. Over the past three years, the Squadron has achieved

significant success in SERCAT 5 workforce integration and expansion, strengthening sustainable effects and capability depth. Key initiatives, such as the Katherine Hospital partnership, have enhanced team cohesion and clinical readiness, while consistent interoperability efforts across Army and Navy elements have strengthened resilience within the ADF Land Trauma System. The transition from legacy systems to JP2060 has driven innovation, while also presenting challenges in modernising capability delivery within a complex and evolving environment. Looking forward, initiatives such as the Spray Dried Plasma project and deeper integration with the ADF Blood Program represent critical advances in survivability and care at reach. This session will demonstrate how disciplined execution, innovation, and workforce integration are enabling a more agile, resilient, and combat-relevant health capability for the future fight.

AI-Enabled Force Protection: Transforming Health Intelligence and Threat Communication for Modern Defence

Dr Andrew Mathieson¹

¹ Australian National University, Canberra, Australia

Biography:

Dr Andrew Mathieson is a Senior Lecturer in Health Science at the Australian National University (ANU), specialising in health systems, public health, environmental health, disaster risk reduction, and workforce capability. With more than 40 years of professional experience across academic, operational, and international settings, he brings a unique interdisciplinary perspective linking prevention, force protection, and organisational resilience.

Andrew has worked extensively across Australia, the Pacific, Africa, the Middle East, and Asia, supporting governments, defence personnel, NGOs, and communities in areas including public health preparedness, environmental health systems, risk communication, emergency management, and health workforce development. His international work has included projects and training activities in Iraq, Afghanistan, Lebanon, Kenya, Malawi, Tanzania, Fiji, Papua New Guinea, Timor-Leste, Pakistan, and Vanuatu.

Alongside his academic career, Andrew served for more than three decades in the UK Reserve Army, undertaking operational deployments and training missions in complex and high-risk environments. This

dual military and academic background has shaped his strong interest in prevention, preparedness, and protecting workforce capability in demanding operational settings.

Andrew is also actively involved in international environmental health leadership, professional education, and global workforce development initiatives through the International Federation of Environmental Health and related professional networks.

Contemporary military operations face an increasingly complex threat environment shaped by emerging infectious diseases, environmental hazards, misinformation, climate-related instability, occupational risks, and rapidly evolving geopolitical pressures. Traditional approaches to force protection and health intelligence are struggling to keep pace with the speed, scale, and complexity of these modern threats. This presentation explores how artificial intelligence (AI) and digital transformation can strengthen force protection capability through enhanced situational awareness, predictive analysis, and more effective threat communication.

The presentation argues that AI is not simply a technological innovation, but a transdisciplinary operational capability requiring integration across public health, environmental health, intelligence, operational planning, logistics, risk communication, and workforce development. Examples will demonstrate how AI-supported systems can assist in hazard surveillance, outbreak prediction, environmental monitoring, workforce health analysis, and rapid decision support in both deployed and domestic settings.

Particular attention will be given to the growing importance of health intelligence as a core component of operational readiness and resilience. The session will examine how modern tools can support in the planning preparation deployment and recovery to identify risks earlier, communicate threats more effectively, and improve evidence-informed decision-making under pressure.

The presentation will also address ethical considerations, workforce readiness, and the importance of maintaining human oversight within AI-enabled systems. Ultimately, modern threats require modern tools, and the future of force protection will depend on organisations capable of integrating digital capability with human expertise, prevention, and operational leadership.

An analysis of the premature deaths of returning New Zealand Nurses of the NZANS in the First world War

Dr Wendy Maddocks¹

¹ University Of Canterbury, Christchurch, New Zealand

Biography:

Wendy currently works as a nurse academic and considers herself to be an amateur nurse historian and has spent the last four years researching various aspects of welfare related to the NZANS in WW1, which has resulted in a number of academic publications and international conference presentations. Recent travel to various key WW1 locations in Europe, UK and has helped to contextualise the research. Wendy recently published *A Broken Nurse of the Great War*, the annotated diary of Sister Mabel Crook and has written a chapter on military welfare (Publication August 2026). In 2025 Wendy was commissioned by the NZDF to present a report to the Waitangi Tribunal Kaupapa Enquiry on psychological welfare in the NZDF post 1949. Wendy has worked with the NZDF as a civilian supporting the delivery of medic training. She draws on a long history of nursing and health education and clinical practice as a nurse in various settings in NZ and UK. Wendy is passionate about ensuring the legacy of military nurses is not forgotten.

Dr. Wendy Maddocks (RN, DHlthSci)

nznursinghistory@gmail.com or
wendy.maddocks@canterbury.ac.nz

ORCID ID <https://orcid.org/0000-0001-5771-810X>

Linked In Dr. Wendy A. Maddocks

In the First World War New Zealand provided over 20% of its nursing workforce as the newly formed New Zealand Army Nursing Service (NZANS) to support the overseas war effort. Around 550 NZANS had overseas service and an unknown number of NZ nurses served privately or for other countries. More than 10% of these nurses returned invalided, 60% had documented sickness in records, and returned to a system that did not provide care and rehabilitation. Subsequent research has found that 20% of the returning nurses suffered a premature death before the age of 70.

Whilst a lot has been written about what the nurses experienced during their service, a detailed analysis of the effects of their service had on them and subsequent premature death, has been missing from the war narrative. This presentation will detail the findings of a comprehensive analysis of all extant information in the military files, and death

certificates of 100 nurses who died before the age of 70. The NZANS nurses individually served for up to five years away and many returned to NZ broken, with no provisions made for their welfare upon their return. Investigating the life limiting effects of their service and associated illness helps strengthen the historical context these nurses worked in and poses questions for the contemporary environment. These nurses were over represented in many statistics when compared with non serving women of similar age and time frame.

This presentation will include detailed statistical analysis of findings from the field, and present case studies which are indicative of how they were failed by the NZ government on their return.

Beyond average scores: Health literacy profiles among Queensland veterans and their families

Dr Tho Dang^{1,3}, Dr Sanket Raut^{1,3}, Associate Professor Luke Johnson^{1,2}, Dr Camila Guindalini^{1,3}

¹ Gallipoli Medical Research Ltd, Greenslopes, Brisbane, Australia

² The University of Queensland, Faculty of Medicine, St Lucia, Brisbane, Australia

³ The University of Queensland, Greenslopes Clinical Unit, Greenslopes, Brisbane, Australia

Biography:

Dr Dang is a Veteran Mental Health Research Fellow at Gallipoli Medical Research. She holds a PhD in Health Economics from The University of Queensland and has expertise in health technology assessment, health economics, and econometric analysis. Her research focuses on the health and wellbeing impacts of military service on veterans and their families, with particular interests in mental health, value for money in service delivery, patient-reported outcomes, and evidence translation.

She has extensive experience applying quantitative and mixed-methods research, including cluster analysis and advanced statistical methods. Dr Dang has contributed to multidisciplinary research on informal caregiving, health literacy, chronic disease management, and healthcare quality, working closely with researchers, clinicians, policymakers, and veteran stakeholders to inform health policy and service delivery.

Her work is driven by a commitment to improving person-centred care and health outcomes for veterans

through evidence-based and practical approaches, including translating research into policy-relevant outputs, educational resources, and digital learning tools for veterans and their families.

Background

Veterans experience higher rates of physical and mental health conditions than the general population and often face challenges navigating civilian healthcare following transition from military service. Health literacy—the ability to access, understand, appraise, and use health information and services—is critical for effective healthcare engagement and self-management. However, reliance on average health literacy scores may mask important between-person differences, limiting identification of individuals requiring additional support and constraining equitable, person-centred health system responses. This study examined multidimensional health literacy profiles among Queensland veterans and their family members to identify subgroups with distinct strengths and challenges to inform targeted, health literacy-responsive service delivery.

Methods

A cross-sectional online survey was conducted among Queensland veterans and their family members between March and September 2024. Participants completed the validated 44-item Health Literacy Questionnaire (HLQ), measuring nine domains covering engagement with healthcare providers, accessing and understanding health information, appraisal of information, active health management, social support for health, and healthcare system navigation. Hierarchical cluster analysis was used to identify distinct health literacy profiles. Demographic and service-related variables were used to support interpretation of cluster membership.

Results

Of the 280 individuals who consented, 191 (160 veterans and 31 family members) provided sufficient data for analysis. Veterans were predominantly older than 50 (78%) and male (83%), while family members were mostly older than 50 (63%) and female (84%). Approximately two-thirds of participants had TAFE/trade or university-level qualifications. Veterans had primarily served in the Army (66%), with a mean service length of 18 years and a mean of 23 years since discharge; one-quarter had been medically discharged from the ADF.

Mean HLQ scores were broadly similar across groups, indicating generally moderate-to-high health literacy (approximately 2.7–3.0/4 for Domains 1–5 and 3.2–3.9/5 for Domains 6–9). Family members generally

reported slightly higher scores than veterans across most domains.

Cluster analysis revealed substantial heterogeneity, identifying seven distinct health literacy profiles among veterans. Notably, 76% of the sample fell within mid-range to lower health literacy clusters. The largest cluster (V3, 26%) demonstrated moderate health literacy and comprised predominantly older, well-educated veterans with substantial service experience. The lowest health literacy clusters (V6–V7, 23%) experienced pronounced challenges in provider engagement, system navigation, social support, and health information appraisal, and were more frequently characterised by lower educational attainment, medical discharge, and non-urban residence. In contrast, the highest health literacy clusters (V1–V2, 24%) showed consistently strong engagement with healthcare providers, system navigation, and understanding of health information; these participants were generally older and urban-dwelling.

Among family members, five distinct health literacy profiles emerged, with approximately 65% classified within moderate-to-lower health literacy clusters. The lowest (F5, 16%) experienced broad difficulties, particularly in provider engagement, social support, and appraisal of health information, and included a greater proportion of rural residents and participants with lower educational attainment, whereas the highest health literacy cluster (F1, 23%) demonstrated strong capability across all domains. Across both groups, higher health literacy profiles were characterised by stronger engagement with healthcare providers, system navigation, and understanding of health information, while lower profiles consistently demonstrated limited social support.

Conclusions

Health literacy among veterans and their families is heterogeneous, and average scores alone may mask important differences in support needs. Embedding health literacy-informed and targeted interventions within veteran and family healthcare systems may help address differing needs, enhance service navigation and engagement with care providers, contributing to more equitable health outcomes for veterans and their families.

Beyond the ICU: The Role of the Intensive Care Physician in Future Contested Operations

Dr Jonathan Begley¹

¹ HQ 2 BDE, Nightcliff, Australia

Biography:

Jonathan is an Australian Regular Army anaesthetist and intensive care physician, with clinical appointments at Royal Darwin Hospital. Jonathan joined the Army Reserve as a medical officer in 2011 and completed his anaesthesia specialty training in 2017. He completed a 12-month fellowship in prehospital and retrieval and worked as an anaesthetist in Wagga Wagga, rural New South Wales, before joining the Army Medical Specialist Program (MSP) in 2020 and completing training in intensive care medicine. He is also a grandfathered Graduate of the Chapter or Perioperative Medicine.

Jonathan is a recipient of the Sidney Sax medal as the top Master of Public Health graduate at James Cook University. He is a keen educator, has completed a Graduate Diploma in Adult Education, and has served as an anaesthesia supervisor of training. Jonathan is an Anaesthesia Top-10 paper author, recipient of the Felicity Hawker Medal, and is a member of the board of the Safe Airway Society. He is an editor of Anaesthesia Reports, and adjunct senior lecturer at Monash University.

Future Australian military operations are likely to occur in environments characterised by distance, dispersion, contested logistics, delayed evacuation. Health facilities may be targeted, preventing the deployment of heavy established facilities. In this context, deploying a conventional intensive care unit (ICU) may not be feasible. However, this should not lead to the conclusion that intensive care physicians have little role in future conflicts. Rather, the potential changing character of military operations may make the broader skill set of the intensivist more relevant, not less.

Intensive care medicine is often understood through the physical space of the ICU: ventilators, monitors, renal replacement therapy, invasive monitoring and high staff-to-patient ratios. In future operations, this may have to be reimagined. The better question may not be whether an ICU can be deployed, but how intensive care expertise can best support patient survival when evacuation is delayed, resources are scarce, and clinical deterioration must be recognised early.

The intensivist brings several capabilities relevant to future deployed care. These include the management of shock, sepsis, major trauma complications, environmental illness, toxicology (including chemical weapon exposure). Intensive care medicine is, at its core, about the prevention of complications – not only does this improve outcomes, but it is a far more efficient use of resources than the alternative. Most importantly, intensivists are accustomed to managing uncertainty, prioritising limited resources, integrating multidisciplinary teams, managing complex ethical dilemmas, and making time-critical decisions with incomplete information. These skills are directly relevant to prolonged field care, damage control resuscitation, post-operative stabilisation, aeromedical evacuation preparation and the care of non-battle injury and disease.

The role may be particularly important given the relative absence of internal medicine physicians in deployed ADF health facilities. Future operations are unlikely to generate only surgical trauma – they will involve infection, tropical disease, chronic disease exacerbations, heat illness and renal injury, and critical illness arising from delayed presentation. In this context, the intensivist may provide a bridge between emergency medicine, anaesthesia, surgery, primary care and evacuation systems.

This presentation argues for a broader conceptualisation of the deployed intensive care physician. Potential roles include clinical leadership in prolonged field care, support to triage and resuscitation, identifying and managing patient deterioration, debriefing and learning from clinical incidents, tele-health advice, and support for ethical decision-making. The intensivist may also contribute to capability planning by identifying which elements of critical care are essential, scalable and survivable in contested environments.

Future conflict may not allow the ADF to deploy an ICU as it would be recognised in established deployed hospital. Nevertheless, the cognitive, procedural and systems expertise of intensive care medicine remains highly relevant. The challenge is to define, train and integrate this role before it is needed. In a future conflict, the intensivist's value may lie not in bringing the ICU to the battlefield, but in bringing intensive care thinking to every point where deterioration, delay and constrained resources intersect.

Beyond the Battlefield: Child and Family Wellbeing After Military Deployment to the Middle East

A/Prof Miranda Van Hooff¹, Dr Camila Guindalini^{1,2}, Dr Pilar Rioseco¹, Dr Jie Hue¹, Dr Mark Westby, Ms Rochelle Lund^{1,2}, Ms Miriam Kent¹, Ms Veena Herron¹, Prof Ed Heffernan³, A/Prof Carla Meurk³, Ms Maddison Deery³, Ms Jessica Elliot³, Ms Cynthia Chen³, Mr Nicolas Riveros Weidermuller⁴, Prof Sharyn Rundle-Thiele⁴, A/Prof Julia Carins⁴, Ms Renata Anibaldi⁴, Mr David Paddison⁴, Ms Tori Brown⁴, Mr Luke van der Beeke⁵, Ms Allison Grainger⁵

1 Gallipoli Medical Research, Greenslopes, Australia

2 University of Queensland, Herston, Australia

3 Queensland Centre for Mental Health Research, Wacol, Australia

4 Griffith University, Brisbane, Australia

5 The Behaviour Change Collective, Perth, Australia

Biography:

Associate Professor Miranda Van Hooff is Manager of Research Engagement and Development at Gallipoli Medical Research and an adjunct Associate Professor at the University of Adelaide. She is a nationally recognised leader in veterans' mental health research, with more than 25 years' experience in trauma and mental health and over 15 years dedicated to the health and wellbeing of Australian Defence Force (ADF) personnel, veterans, and their families.

Since 2009, Associate Professor Van Hooff has led major longitudinal research programs examining the long-term mental, physical, and social health outcomes of serving and ex-serving ADF members and their families. As a lead investigator on the Transition and Wellbeing Research Programme and the Military Health Outcomes Programme, she has overseen large-scale, multi-wave cohort studies that have generated critical evidence on mental health, transition from military to civilian life, and family wellbeing. Her work produced the first Australian estimates of ICD-10 mental disorder prevalence among serving and ex-serving ADF personnel and has directly informed government policy, service delivery, and veteran support programs.

She has authored 90 peer-reviewed publications and 42 government reports, and is widely recognised for translating high-quality longitudinal evidence into improved systems of care for veterans and military families.

Background

Australian Defence Force deployments to the Middle East Area of Operations (MEAO; 2002–2021) have produced enduring consequences not only for veterans but also for partners, children, and wider family systems. Understanding these long-term impacts is critical to advancing child and family wellbeing across periods of prolonged stress, separation, and reintegration.

Methods

This presentation integrates findings from Phase 1 and Phase 2 of the MEAO Scoping Study Funded by RSL Australia. Phase 1 comprised a comprehensive scoping review of international peer-reviewed and grey literature examining long-term mental, physical, and social health outcomes for MEAO veterans and their families, with dedicated analyses of traumatic brain injury (TBI/mTBI) and moral injury. The review followed Joanna Briggs Institute methodology and PRISMA-ScR guidelines, synthesising evidence from 2,899 sources. Phase 2 involved participatory workshops with veterans, partners, parents, and community members (n=65) across four Australian cities, using co-design and design-thinking approaches. Data were analysed using inductive thematic analysis and sentiment analysis.

Results

Across both phases, MEAO deployments were associated with sustained strain on family functioning. Convergent evidence highlighted partner distress, relationship conflict, disrupted parenting roles, and secondary traumatic stress linked to veterans' PTSD, depression, moral injury, and reintegration difficulties. Children experienced emotional, behavioural, and developmental impacts, particularly following repeated deployments. Identity disruption, emotional disconnection, and limited access to family-inclusive supports were prominent. Protective factors included pre-deployment preparation, emotional openness, social and peer support, and proactive, family-centred services, though system-level gaps persist.

Audience takeaway

The presentation will equip the audience with a nuanced understanding of how deployment-related trauma, moral injury, and reintegration challenges intersect with parenting, couple relationships, and child development, highlighting protective factors and service gaps relevant to family wellbeing practice.

Acknowledgement of funding

This research was funded by RSL Australia.

'Bridging the Gap': A Regional Dental Advisor Framework to Strengthen Governance, Capability and Operational Readiness in the ADF

Dr Thomas Van Heumen¹

¹ Garrison Health - JHC

Biography:

LTCOL van Heumen was commissioned into the Australian Army in 2006 while undertaking his Bachelor of Dental Science degree at the University of Queensland. Throughout his career he has fulfilled a diverse range of health officer roles, with highlights including the inaugural Brigade Dental Officer for the 2nd Health Brigade, SO1 Health Governance in Army Headquarters and Officer Commanding of 33rd Dental Company in the 2nd General Health Battalion. LTCOL van Heumen is currently the SO1 Dental Garrison in Joint Health Command and is the senior technical advisor for all dental matters across the garrison health facilities in the Australian Defence Force.

LTCOL van Heumen is a Fellow of the Royal Australasian College of Dental Surgeons in General Dental Practice. In 2018 he completed a Doctor of Clinical Dentistry in Periodontics at the University of Melbourne. As a registered periodontist he maintains clinical currency in both garrison clinics and private practice. He stays up to date with dental technologies and research by participating in various professional colleges and societies.

Background

Delivering safe, effective and operationally relevant dental care across geographically dispersed Australian Defence Force (ADF) populations presents persistent governance, workforce and assurance challenges. Historically, dental oversight at regional and local levels has been inconsistent, with limited capacity for clinical governance, contractor assurance, workforce development and integration with operational planning.

To address these gaps, Joint Health Command established the Regional Dental Advisor (RDA) Framework, comprising four uniformed O5 positions embedded across the national Garrison Health system. By January 2027, the framework will be fully implemented, with senior dental leaders embedded within regional JHC headquarters and technical networks, providing governance oversight and subject matter expertise across all ADF dental facilities. Their primary role is to enhance

governance, patient safety, workforce capability and operational readiness.

Concept

Strong clinical leadership, governance and assurance are essential for safe, effective and efficient healthcare delivery. However, these principles have not been consistently applied to dental services within Defence. Dentistry presents unique operational and workforce challenges that require dedicated oversight to ensure clinical quality, consistency of care and effective risk management.

The RDA Framework addresses these gaps, with early implementation already demonstrating benefits across multiple domains. This presentation will explore:

- Current gaps in regional and strategic oversight of ADF dentistry
- Structure of the RDA Framework within Garrison Health
- Core RDA functions and responsibilities
- Contributions to capability modernisation and patient experience
- Contract oversight improving accountability and reducing inefficiencies
- Mentorship supporting development of deployable dental capability
- Integration of dental advice into force health protection and planning
- Future RDA priorities and initiatives

Conclusion

This presentation will summarise the RDA Framework and its early contributions to governance, patient safety, workforce capability and contract assurance within ADF health services. It will also highlight broader implications for military readiness and operational capability.

Increasing strategic demands require a more agile and robust dental capability. The RDA Framework is a key enabler of this transformation by bridging existing gaps and strengthening the future of ADF dental capability.

Building Resilient Health Training Capability - 294 Squadron Training and 94 Wing Force Generation in Support of the National Defence Strategy

WGCDR Jason Lynam¹

¹ RAAF, Amberley, Australia

Biography:

Wing Commander Jason Lynam is a Registered Emergency Nurse who trained at the Royal Brisbane and Women's Hospital before joining the Royal Australian Air Force in 2008 as a Nursing Officer.

He has deployed widely across Australia, the Indo-Pacific, the Middle East, Nepal and Antarctica. Early in his career, he served in the Middle East a number of times as a Primary Health Care Nurse, an ICU Nurse at Kandahar Role 3 Hospital and as an Aeromedical Evacuation Liaison Officer, conducting and coordinating numerous tactical and strategic evacuations.

He has held key operational and leadership roles, notably in Afghanistan (2013) he embedded with US Army 4th Infantry Division where he led Southern Afghanistan regional patient evacuation as Officer-in-Charge of the NATO Patient Evacuation Coordination Cell (PECC).

WGCDR Lynam has also led humanitarian and aeromedical missions, including Operation Nepal Assist and Antarctic AE trials. Subsequent roles include Senior Joint Health Officer South Australia and Executive Officer No. 2 Expeditionary Health Squadron, supporting Operation Bushfire Assist and A5 Health Planner for HQTJF629 COVID-19 response.

He now commands No. 294 Squadron. He holds a Bachelor of Nursing, a Master of Health Science (Health Administration), and a Master of Military and Defence Studies (ANU).

Abstract

The 2026 Australian Military Medicine Association (AMMA) conference theme Shifting Tides of Military Medicine: Geopolitics, Interoperability and Resilience captures the increasing complexity faced by Australian Defence Force (ADF) health services in a potentially contested Indo-Pacific. The Royal Australian Air Force (RAAF) No. 294 Squadron, within 94 Wing, plays a critical role in force generation and assurance by delivering contemporary, mission-focused health training aligned with the Defence Strategic Review (DSR) and National Defence Strategy (NDS).

This presentation outlines how 294 Squadron's health training continuum prepares personnel for operations in austere, resource-constrained environments across northern Australia and the wider Indo-Pacific. Central to this approach is the Integrated high Performance high Acuity Clinical Training (IMPACT) framework, which addresses critical gaps in clinical readiness through immersive, scenario-based training. Delivered across multiple iterations since 2024, IMPACT leverages experienced specialist faculty to develop high-performing clinical teams capable of managing high-acuity, high-consequence events, with emphasis on trauma care, ethical decision-making, and prolonged field care in degraded and contested environments.

Training scenarios emphasise constrained logistics, degraded communications, and contested aeromedical evacuation pathways, reflecting the realities of future operations. These outcomes are further enhanced through innovative training technologies such as the BlueRoom mixed reality simulator, which integrates C-130J and C-17 Globemaster III platforms and Tactical Combat Casualty Care modules. This sovereign capability enables scalable, high-fidelity rehearsal of clinical and tactical tasks, reducing reliance on aircraft availability while improving preparedness for real-world mission sets.

Beyond individual readiness, 94 Wing strengthens force generation through deliberate collective and multinational training. Integrated exercises and international courses—including aeromedical evacuation training for non-traditional partners—have expanded participation to personnel from across the Indo-Pacific and beyond, fostering interoperability, shared understanding, and coalition readiness. These engagements are complemented by a strong instructional culture, where experienced clinicians are rapidly developed into effective educators through mentorship and a values-based learning environment that promotes excellence and psychological safety.

The training system incorporates iterative clinical governance, innovation, and lessons learned from operational deployments and exercises, ensuring continuous refinement of capability. High levels of individual readiness, professional accreditation, and workforce resilience underpin the system, supported by compassionate leadership and a strong emphasis on mental and physical preparedness.

Through this integrated approach, 294 Squadron and 94 Wing are developing a resilient, adaptable health workforce capable of independent action and sustained operations at range directly supporting NDS priorities for agility, self-reliance, and interoperability.

This presentation demonstrates how RAAF health training delivers a coherent, innovative, and future-focused capability that enables operational resilience and ensures the ADF can project and sustain effective medical support in complex, contested, and dynamic environments across the Indo-Pacific.

Care of the Dying: A Model for Preparing Clinicians

Dr Ash Duncan

Biography:

MAJ Ash Duncan is a GP, currently appointed as the Senior Medical Officer of the 3rd Health Battalion, overseeing Army's deployable clinicians for SA, Vic and Tas. His career has spanned undergraduate in Philosophy to service as a Rifleman, and deployment to the Middle-East to provide mental health care forward during the peak of Australian casualties. His clinical work currently focuses on persistent musculoskeletal pain, and he has recently commenced Army's first in-house clinic for assessment and targeted injection-based therapies for contributory pathways.

Despite the inevitability of death in war, care of the dying remains an often overlooked aspect of military medicine. Simple lists of medications exist; but the challenges of clinicians in large scale combat operations (LSCO) are likely to involve austerity, triage, and the risk of moral injury – particularly to junior clinicians. A training model has been developed to assist with these aspects.

This training model introduces junior clinicians to the practical challenges of MASCAS events, criteria for focusing on comfort care, and the ethical framework necessary to reduce the risk of moral injury. Informational aspects introduce changes to expect in the patient, pharmacological and – more importantly – non-pharmacological strategies to assist. Training then considers scene management, self-management, team management, and introduces the practicalities of mortuary affairs.

However, the most challenging aspect of care of the dying remains the actual emotional experience. To be effective, preparation must include this dimension – yet no military medical training package worldwide has yet done so. This model is the first to deliberately engage the experiential aspect, and explore several approaches to prepare for those moments.

This session acknowledges unresolved tensions in policy not yet geared for large scale combat operations, and opens the conversation on the next steps.

Chaplaincy in War: Addressing a Critical Capability Gap in the Land Based Trauma System during Large Scale Combat Operations

Chaplain Scott Doran-Sargent¹

¹ ADF, Australia

Biography:

Chaplain (Lieutenant Colonel) Scott Doran-Sargent is the Senior Chaplain of the 2nd Health Brigade and has served for more than 20 years as an Australian Army Reserve Chaplain, including one overseas and two domestic operational deployments. Throughout his service, he has provided pastoral, spiritual, and welfare support to Army personnel and their families across a broad range of settings. In recent years, his focus has shifted to chaplaincy leadership, training, mentoring, and workforce development.

In 2026, Scott completed the United States Army Combat Medical Ministry Course at Fort Jackson, South Carolina. The course prepares chaplains to provide comprehensive pastoral and spiritual care to the injured and dying in battlefield environments, forward-deployed medical units, and trauma response teams, while also supporting deployed healthcare personnel. He is currently leading the development of training to address a key Australian Army capability gap by preparing chaplains for integrated ministry within medical units during large-scale combat operations.

Before entering ministry, Scott served as a Tasmania Police officer.

He lives in Hobart with his wife, Jan, and they have four adult children.

Large Scale Combat Operations (LSCO) are likely to expose Australian soldiers, medical personnel and chaplains to levels of casualties, death, human suffering and moral distress not experienced by the Australian Defence Force since the Second World War.

Contemporary experience from Ukraine demonstrates that sustained high-intensity conflict places extraordinary demands on casualties, healthcare personnel, and chaplains operating throughout the trauma system. As the ADF prepares for casualty rates and operational tempos more consistent with LSCO, the effective preparation and integration of well-trained chaplains within the Land Based Trauma System (LBTS) becomes an increasingly important consideration for health system and workforce resilience to ensure the continued delivery of medical care during sustained operations.

This reality is not new. From Australia's first overseas deployment through to Afghanistan, chaplains have accompanied soldiers into war, providing support wherever personnel are wounded, dying, grieving, or in distress. As Major General Bernard Loeffke (US Army) observed, chaplains are sent where they are needed—where soldiers are wounded and dying.

Yet, while considerable effort has been devoted to preparing medical personnel in the LBTS, less attention has been given to the preparation and integration of chaplains as a non-clinical workforce capability who care for the wounded and dying, honour the dead, and support medical personnel at risk of vicarious trauma and moral injury.

Further, while Army doctrine recognises the chaplain's role across the continuum of casualty care, many chaplains have not trained in environments characterised by sustained MASCAL events, complex triage decisions, prolonged exposure to death, or the psychological demands placed on medical personnel. This creates a capability gap within the LBTS at precisely the point where casualties, healthcare personnel, and commanders may require spiritual, pastoral, and moral support the most.

In response, earlier this year, two senior Australian Army chaplains undertook the US Army's Combat Medical Ministry Course, which prepares US Army chaplains for, among other things, MASCAL events during LSCO. Drawing on lessons from that training and observations from Ukrainian military chaplains operating under wartime conditions, Army Chaplaincy is developing a pilot program to better prepare chaplains to operate effectively during LSCO, particularly where soldiers are injured and dying.

In 2027, a pilot training program will begin where Australian Army chaplains will undergo a MASCAL training exercise, which will firstly involve a day of briefings from a senior medical and psych officer and a senior chaplain. Aspects covered will include:

- Priority of care, caring for the injured and dying, and micro-interventions in support of medical staff (Chaplain input),
- How triage decisions are made under LSCO conditions, why space, flow, and noise matter, and the emotional load on medical personnel (Medical Officer input), and
- Psychological first aid to medical personnel, the chaplain's emotional regulation, and how trauma can accumulate across repeated MASCALs (Psychologist input).

In partnership with the 2nd Health Brigade and other key health stakeholders, utilising an action-

reflection-action approach, chaplains will then participate in a MASCAL simulation designed to prepare them for employment as an integrated capability within the LBTS during war, under the guidance of an experienced senior chaplain.

This session will explore three questions:

1. What role should trained chaplains play within the LBTS during LSCO?
2. What barriers exist to the effective integration of chaplains within the LBTS during LSCO?
3. How might a scalable training model rapidly prepare Army chaplains for wartime employment within the LBTS should that become necessary?

Cognitive and behavioural processes in problematic anger: Development and validation of three new measures in Australian Defence Force members

Professor Jennifer Wild^{1,2,3}, Dr Zoe Jenkins¹, Dr Ellen Wessell^{1,4}

1 Directorate of Health Research, Joint Health Command, Department of Defence, Canberra, Australia

2 Phoenix Australia Posttraumatic Centre for Mental Health, University of Melbourne, Melbourne, Australia,

3 Department of Experimental Psychology, University of Oxford, United Kingdom

4 University of Queensland, Brisbane, Australia

Biography:

*Jennifer Wild is Professor of Military Mental Health at Phoenix Australia, University of Melbourne, the Australian Defence Force, and Visiting Professor of Experimental Psychology at the University of Oxford. Her area of expertise is in developing interventions to prevent the onset and persistence of PTSD and major depression in high risk occupations at risk of trauma, such as military members, and in developing and evaluating evidence-based interventions for anxiety and stress disorders. She is dedicated to improving treatments so they are more precise and effective and reach the people who need them most. She has written over 100 publications and two books, including a recently published popular science book on resilience, *Be Extraordinary: 7 Key Skills to Transform Your Life from Ordinary to Extraordinary*. Professor Wild regularly appears in the media giving advice rooted in science for preventing the onset and persistence of trauma-related mental health problems.*

Background

Problematic anger is common in military populations and is associated with significant impairment in relationships, occupational functioning, and mental health. Anger frequently co-occurs with posttraumatic stress disorder (PTSD) and may predict subsequent PTSD symptom onset. Yet the cognitive and behavioural processes that maintain problematic anger remain poorly specified, limiting the development of targeted interventions. Three new measures were developed, grounded in interviews with military members experiencing problematic anger: the Anger Cognitions Inventory (ACI), the Anger Behaviours Questionnaire (ABQ), and the Anger-Related Metacognitions Scale (ARMS).

Method

Serving Australian Defence Force members (N=4,329) completed the ACI, ABQ, and ARMS alongside validated measures of problematic anger, PTSD symptom severity, combat exposure and metacognitive anger processing. The ACI comprises 38 appraisals associated with the experience of anger, assessing cognitive themes including perceived injustice, sense of threat, hostile perceptions of other people, perceived devaluation, and reactivated memories, with items such as 'People are out to get me', 'I need to protect what is important to me', and 'What I value is under threat'. The ABQ comprises 36 items assessing common behavioural responses to anger, including rumination, suppression, hypervigilance, aggressive expression, and avoidance, with items such as 'I go over and over what I could have done differently', 'I withdraw from friends and family', and 'I do something to make someone else feel bad'. The ARMS comprises 11 items assessing positive beliefs about anger, such as 'Anger is useful to change other people's behaviour', 'Anger shows I am serious', 'Anger is acceptable when calm words are not enough,' and 'Anger helps you to focus'. All items are rated on a 7-point scale from 1 (totally disagree) to 7 (totally agree), with higher scores indicating greater agreement. Exploratory and confirmatory factor analyses examined the factor structure of the new measures, and correlations with established measures examined their convergent validity. Hierarchical regression analyses examined whether the cognitive and behavioural processes measured by the new questionnaires predicted anger over and above PTSD symptom severity. The study was approved by the Departments of Defence and Veterans' Affairs Human Research Ethics Committee (protocol number: 659-25).

Results

As expected, problematic anger was highly correlated with PTSD symptom severity. Anger-related cognitions, behaviours and metacognitions explained significant additional variance in problematic anger over and above PTSD symptom severity, with moderate unique associations for hostile perceptions of other people (ACI) rumination and avoidance (ABQ) and positive beliefs about the usefulness and social acceptability of anger (ARMS). The factor structure of the ACI, ABQ, and ARMS, their psychometric properties, and short-form versions derived from the factor analyses will be presented.

Conclusions

Cognitive and behavioural processes are distinctly associated with problematic anger in military personnel, consistent with a maintaining role, and represent promising targets for treatment.

Note

The opinions expressed in this abstract are that of the authors/presenters, and not of the Department of Defence.

Connections and Divergence: Medics and the Century of Warfare

Dr Kristina Griffin¹

1 Charles Sturt University, Australia

Biography:

Dr Kristina Griffin an experienced academic who has extensive experience in nursing and healthcare both nationally and internationally. Her focus on education and leadership in public, private and Australian Defence force settings have given Dr Griffin a comprehensive understanding of the healthcare needs of a variety of unique populations and the education requirements vital for those caring for them.

Dr Griffin is also an active member of the Australian Health Practitioner Regulation Agency, and the Australian College of Nursing. These industry, leadership and regulatory bodies are responsible for driving change in healthcare, nursing, and education. Her active involvement in these professional networks ensures she contributes to dialogue and initiatives within the nursing and healthcare education landscape.

Dr Griffin has extensive research interests that include mental health nursing and rural workforce, with a special focus on frontline workers and diverse populations.

The service of an Army medic is a dual role, requiring a commitment both to warfare, and to healing. The self-representations and reflections of army medics are important to social history. To research this, the records of Australian stretcher-bearers during World War One, and combat medics during the contemporary military conflicts in the Middle East, are contrasted. Separated by a century, they have significant commonality as the need to treat and remove wounded from battle to preserve the fighting force is as old as war itself. With dual roles of soldier and healer, they are responsible for both supporting armed conflict and the saving of lives. This duality appears as an irreconcilable psychological burden and an unrepresented aspect of military history. The impact on the people whose stories are reflected in this research is explored, both in the immediacy of events and on reflection, contextualised within historical narrative.

A comparative study of the specialised role of medical assistant in the Royal Australian Army Medical Corps (RAAMC), in World War One (WW1), and the contemporary military interventions in the Middle East, shows the unique features of this form of military service. The Australian Army Medic, or medical assistant, has worked to save lives on battlefields, humanitarian missions, and peacekeeping operations, for over one hundred years. Their service has the dual roles of soldier and healer. Themes such as idealism, ambiguity, trauma and self-scrutiny mark the experience of this liminal role. Contemporary serving medics, who have deployed to conflicts such as Iraq and Afghanistan in the Middle Eastern Area of Operations (MEAO) have key features in common with their forebears, the stretcher bearers of WW1. Those who treat the wounded on the battlefield support victory by saving lives, and also by preserving morale with the assurance that, if wounded, another will risk their life to save them. The history of medical services in military institutions has documented the role of trained medics in supporting combat. This research considers not what medic services meant to the war, but what war meant to the medic. Utilising unpublished letters and diaries from the stretcher bearers, and interviews with current serving army medics, this research explores their unique standpoint, contextualised by the individual narratives.

The duality of the role of the medic as both a soldier in the field, with a duty to support armed conflict, and also in saving lives through clinical care, creates a psychological burden of multiple sets of responsibilities. The primary sources used to analyse the WW1 experience relate only to their experiences during the war, but do not directly inform of their post

war situation, unlike the interviews which inform both. Despite this, comparative analysis is possible and extremely revealing regarding the convergence of their experiences which are decades apart.

Curate, Understand, Empower: The CUE Framework for Suicidality Surveillance in the Australian Army

Dr Samantha Hodges^{1,2}

1 Australian Army, Australia

2 University of Queensland, Australia

Biography:

LTCOL Hodges is a senior military psychologist with 20 years experience providing clinical care and specialist command support within training, operational, joint, and whole of government environments. She holds a Bachelor of Psychology (Honours), a Masters of Clinical Psychology, a Graduate Certificate in Global Health, and a Doctorate of Philosophy. LTCOL Hodges has authored multiple peer reviewed papers, presented at various international mental health conferences, and sits on the peer review panel for a number of Australian and international research journals. Her current areas of research interest include public health surveillance systems, suicidality, and stakeholder integration.

Despite continued efforts and prioritisation, suicidality in military populations globally remains a prominent concern. In Australia, the Royal Commission into Defence and Veteran Suicide highlighted the need to improve the surveillance of suicidality in the serving and veteran ADF community, in order to improve prevention and care strategies. The author presents a proposed framework for effective and culturally competent suicidality surveillance in the Australian Army, drawn from mixed methods research including a quantitative sample of 2,346 suicidality events and in depth stakeholder interviews.

The presentation illuminates the complex, dynamic, and culturally bound ecosystem in which military suicidality surveillance is required to operate. Stigma, fear of negative career consequences, public scrutiny, and other barriers to help seeking must be navigated, and unravelling this complexity pulls the purpose of the system in different directions, raising questions of priorities, privacy, and utility. Despite these challenges, the findings suggest that effective and culturally competent suicidality surveillance is achievable, and may make important contributions to the prevention and management of suicidality both in the Army and other military and industry populations.

Dental Readiness, Combat Effectiveness: The Importance of Dental Readiness in Army Force Modernisation Objectives

LTCOL Thomas Briggs¹

¹ Australian Army, Brisbane, Australia

Biography:

Dr Thomas Briggs completed his Bachelor of Dental Surgery at James Cook University as part of the inaugural graduating cohort in 2013. Following his undergraduate training, Tom took up a scholarship with the Australian Army and served as a General Dentist in the Australian Army from 2014 to 2019. He later pursued specialist training in Periodontology at the University of Queensland, graduating in 2022.

Dr Briggs has maintained a distinguished military career and currently serves as a Lieutenant Colonel, overseeing all dental services across Queensland for the Australian Defence Force. He also practices as a specialist clinical consultant at Gallipoli Barracks, Enoggera, and RAAF Base Amberley, providing advanced periodontal care to Defence personnel.

In addition to his clinical and military roles, Dr Briggs is an Adjunct Lecturer at the University of Queensland. He is an active member of several professional organisations, including ASP, ANZAP, ITI, AOS, and the Royal Australasian College of Dental Surgeons. He is a Fellow of the Pierre Fauchard Academy and the International College of Dentists, and an Associate Fellow of the Australian College of Health Service Management.

Outside of work, he enjoys spending time with his wife, Tiana, and their son, Bodhi.

LTCOL Thomas Briggs, RDA QLD, Joint Health Command (ADF)

Background

Dental morbidity remains a persistent contributor to non-battle casualties, directly impacting deployability, operational capability, and sustainment of the force. In modern and increasingly distributed operating environments, preventable dental conditions can result in avoidable evacuation, loss of combat power, and disruption to operational tempo. Ensuring personnel are dentally fit is therefore fundamental to maintaining readiness and resilience.

Recent insights, including Thietten (2026) Ukrainian Dental Readiness Update, reinforce the operational necessity of reducing dental casualties through proactive and preventative health measures.

Concept

This presentation outlines recent updates to the ADF dental fitness framework in DHM Level 2 Part 11 Chapter 1, designed to strengthen force health protection and align with ADF Modernisation objectives. Central to these reforms is the transition from a risk-based Periodic Dental Examination (6–24 months) to a mandatory annual examination, improving consistency in surveillance and early intervention.

Important changes to the Dental Fitness Classification (DFC) system are also introduced, including refinement of DFC 1–3 categories, the cessation of DFC R, and the introduction of DFC 0, representing personnel with unknown dental risk status. This is particularly relevant to the reserve workforce and reflects the realities of the Total Workforce Model, where not all members have routine access to ADF dental services.

These updates enhance alignment with NATO standards and contemporary preventive care principles while supporting a more proactive, capability-focused model of care.

Conclusion

By reducing the risk of dental casualties and enabling earlier intervention, these policy changes reinforce dental readiness as a force multiplier—ensuring personnel remain “Oral Ready. Combat Capable.” This presentation will inform commanders and clinicians of the operational implications and their role in embedding these changes to sustain combat capability.

‘Digger Spirituality’ and the Sophistry of the Irreligious Australian Defence Force Veteran

Dr Murray Davies

¹ Wounded Spirit, Canberra, Australia

Biography:

Dr Murray Davies is the CSO of the veterans charity Wounded Spirit. Wounded Spirit helps veterans who have experienced spiritual damage resulting from military service. A former Australian Army Lieutenant Colonel, Murray is a graduate of the Royal Military College and Australian Army Staff College. Murray’s PhD from the University of Divinity was on ‘The Influence of Spiritual Wounds and Injuries on Australian Defence Force Veterans.’ Additionally, Murray holds a Master’s in Theology, Defence and Internal Relations, a Graduate Diploma in Theology and a Bachelor of Arts (Honours).

There is a popular image of the Australian Defence Force (ADF) member that is often aired on television during ANZAC and Remembrance Days. It is summarised by Gammage's almost throwaway comment that apparently the average Australian [soldier] was not religious during the Great War (Gammage, 1990, xv). Robert Linden takes this a little further by saying that they were "Rough, hard-bitten, cynical, worldly, irreligious, irrepressible, womanising, gambling, independent-minded hell-raiser(s)" (Lindler 2000, p. 29). The current Australian Bureau of Statistics (ABS) and ADF statistics on religious affiliation would certainly seem to confirm this assumption. Almost 40% of the Australian population reports no religious affiliation (ABS, 2004). At 64%, Defence's non-affiliation rate exceeds the national average (Hoglin, 2023).

While the popular image of the irreligious soldier may be true in part, it does not mean that Australian Defence personnel and veterans are not spiritually guided, aligned, and attuned. This is particularly evident when following Defence's definition of spirituality. Likewise, evidence gathered across the spectrum of 20th- and 21st-Century Australian conflicts argues for a much deeper and more pervasive sense of faith unique to Australian Service personnel, which I define as Digger Spirituality. This is a human spirituality that goes beyond the bounds of religious observance and conviction. If an individual has such a sense of spirituality that inspires meaning and purpose, it can be injured and wounded by traumatic events that have been defined as Spiritual Wounds and Injuries (SW&I).

Diving under pressure - when dive trainees present late, is it always a problem?

Dr Aaron Tracey¹

¹ ADF, Perth, Australia

Biography:

LTCOL Aaron Tracey is an Army Medical Officer and holds a Fellowship of the Royal Australian College of General Practitioners and a Masters in Traumatology. He has been posted to pre-hospital and Senior Medical Officer positions since 2016, with training and experience in aspects of remote and austere, occupational, aviation, and diving medicine.

Delayed presentation is not uncommon in civilian diving medicine, due to a myriad of factors. These have been attributed to limited knowledge, poor medical support, and mild symptom severity, amongst other factors.

These factors should be mitigated in the military setting due to structured training, strict adherence to dive tables, robust policy and guidelines, and increased oversight, but military dive trainees also exhibit delayed presentation on occasion.

Military dive trainees have strong incentives to minimise symptoms and delay presentation despite the potential significant personal consequences. The tight schedules of dive training and pressure to keep up with the course to avoid removal from training may play a role.

This presentation will outline a number of case studies of delayed presentation with concerning symptoms and potentially serious pathology.

This prompts the question as to whether further research into dive trainee attitudes to dive related injuries and illnesses should be conducted, and whether current diver health training and course design are effective in encouraging divers to seek care when indicated.

Early insights into the VETS Act

Dr Fletcher Davies

¹ Department Of Veterans' Affairs, Australia

Biography:

Dr Fletcher Davies completed his medical degree at the University of Adelaide and spent the next 15 years working in acute hospital medical throughout South Australia and Victoria. After completing Masters Degrees in both Public Health and Healthcare Management, he joined the Department of Veterans' Affairs (DVA) in 2013. While at DVA, he has contributed to the design of the current claims processing IT system, rationalisation of provider-facing paperwork, the development of a governance framework for clinical advisers, and the implementation of an assertive case management program for vulnerable veterans. He has been in the role of Principal Medical Adviser, Compensation since 2019.

The Veterans' Entitlements, Treatment, and Support (VETS) Act was implemented on 1 July 2026. From this date, all new claims have been considered under an improved MRCA. The move to a single Act provides a chance to simplify and speed up claims processing. Significant changes include the introduction of provisional liability, coverage for all 'on-duty' injuries, simplified date of effect determination, expanded gold-card eligibility, and a streamlined review pathway. Challenges exist in managing 'grandfathered' and transitional arrangements, conversion of historic DRCA assessments, and optimising service periods

for presumptive acceptance. This presentation will discuss the impact of these changes on both veterans and their healthcare providers, and early learnings following transition to a single Act. It will also highlight the future opportunities that these changes will create to reframe the Compensation process as one which better promotes recovery, good health, and overall wellbeing, rather than focussing on illness.

Enhancing Forward Medical Support through Drone-Enabled Blood Logistics

Amany Wahba¹, Dr Joni Sytsma²

¹ Saab Australia Pty Ltd, Australia

² Outer Loop Engineering, Australia

Biography:

Dr. Joni Sytsma is an experienced aerospace engineer and innovative leader who transitioned from the USA to become an Australian citizen in 2022. With a Ph.D. in Aerospace Engineering, her 18+ year career includes significant contributions at the United States Air Force Research Laboratory, where she developed early weaponized drone systems and worked on hypersonics. In Australia, Joni has held key technology leadership roles at Gilmour Space Technologies, developing software for space rockets, and at the counter-drone company Department 13. Currently, she serves as CEO of Outer Loop Engineering, spearheading technological advancements for upcoming drone projects. Joni is also a strong advocate for diversity in aerospace and the application of advanced manufacturing techniques.

At AMMA 2025, our consortium presented the case for ultra-rapid medical resupply at the Point of Injury (POI) using a high-speed, electrically propelled drone, with a vision of 72-second transit to a 5 km POI. Twelve months on, that concept is a flight-validated system, and the path to first operational trials with the Australian Defence Force is set for late 2026. Pre-prepared payloads ready for immediate transit via the AEROMed platform could include blood, medical equipment, pharmaceuticals and other consumables. Coupled with a solution for managing payloads in preparation for rapid delivery, this drone provides medical logistics planners with a means of transporting time-critical, temperature-sensitive medical supplies forwards of Role 1 and Role 2 healthcare facilities.

This presentation reports on the technical, operational, and regulatory progress that has transformed the AEROMed platform from prototype to deployable capability. Over the past year, Rocket Fast Drones (RFD), the productisation arm of Outer Loop Engineering, has in partnership with Saab Australia, completed validated full mission profiles including vertical take-off, forward and back transition between vertical and fixed-wing flight, demonstrated sustained dash speeds consistent with the original 72-second / 5 km mission profile, and proven the predictive accuracy of the simulator-to-flight pipeline against real airframes in 20+ knot winds. Saab Australia, through its Deployable Health Capability Support Centre, has matured the temperature-managed payload architecture for whole blood and pharmaceutical delivery. RFD now operates under a CASA Remote Operator's Certificate (ReOC) authorising operations of larger drone platforms, removing the regulatory ceiling that constrained last year's flight programme.

The presentation will share validated performance data on the AEROMed platform: dash speed, range envelope, payload mass and thermal performance, wind tolerance, and reliability across multiple airframes and flight cycles. We will discuss the availability of first AEROMed trial units to ADF. We will close with an honest assessment of the engineering and procurement work that remains between flight-proven capability and POI-resupply in a deployed setting, including the work required to push the range and speed envelopes.

The presenters propose to bring flight-ready airframes to the conference and present the concept at a pre-conference workshop. A static display of operational hardware is committed.

To our knowledge, this is the first presentation within the Australasian military medicine community of a sovereign-developed, electrically propelled, tube-launched high-speed medical resupply drone will be presented with flight-validated performance data and a confirmed pathway into ADF user trials. The Golden Hour, for the casualty in the most isolated position on the battlefield, is finally engineerable as a logistics problem with hardware to match.

Ethical Conflicts and Moral Injury in Australian Defence Force Medics: Exploring challenges faced by military healthcare professionals

Dr Kristina Griffin¹

¹ Charles Sturt University, Australia

Biography:

Dr Kristina Griffin an experienced academic who has extensive experience in nursing and healthcare both nationally and internationally. Her focus on education and leadership in public, private and Australian Defence force settings have given Dr Griffin a comprehensive understanding of the healthcare needs of a variety of unique populations and the education requirements vital for those caring for them.

Dr Griffin is also an active member of the Australian Health Practitioner Regulation Agency, and the Australian College of Nursing. These industry, leadership and regulatory bodies are responsible for driving change in healthcare, nursing, and education. Her active involvement in these professional networks ensures she contributes to dialogue and initiatives within the nursing and healthcare education landscape.

Dr Griffin has extensive research interests that include mental health nursing and rural workforce, with a special focus on frontline workers and diverse populations.

Background

Australian Military medics, who are both professional soldiers and qualified nurses, can face situations where their training and moral ethos conflict in the performance of duty. Their role has intrinsic duality. They are both a soldier, thus a member of a military organisation, as well as a healer, a nurse with a corresponding duty of care. Both roles have ethical, legal and professional responsibilities, codes of conduct and moral codes. They are therefore guided by nursing codes of ethics and professional conduct which provides a framework for patient care and professional decision making. These may rival military objectives and orders of battle, leading to a disaccord for the person involved and result in a moral dilemma. Both also are roles which have strong cultural images and distinct expectations from individuals and those around them. This can lead to moral dilemmas, moral injury and long-term psychological illness. In the 2024 Royal Commission into Defence and Veteran Suicide in Australia, moral injury was cited as a relatively new, but not widely acknowledged, risk factor that may lead to suicide.

In the context of defence, moral injury can be described as being experienced by a person who participates in, or witnesses, actions that go against their moral code or moral beliefs. Exposure to traumatising events on operational deployments, both war-like and non-combat, leads to psychological distress. Moral distress triggers emotions of shame and guilt and is not well understood or documented. It has been described as a 'wounding of the soul, of doing something or witnessing something really wrong'. It manifests as anxiety, depression, self-harm and suicidal thoughts and intent. The risk of such harmful outcomes is increased and exacerbated through the role duality of the Australian Army medic.

Research Design

The research presented is a study into the role duality of the Australian Army medic in warzones. It focuses on interviews from twelve Australian Army medics who have deployed overseas in recent conflicts with the research question: How does the intrinsic duality and resultant ethical conflicts of the role of the medic impact the individual performing this specialised role?

Force Health Protection: Closing a critical gap in ADF health capability

Dr Madeleine Marsland¹,

Colonel Peta Mantel AM²

¹ Department of Defence, Australia

² Australian Army, Canberra, Australia¹

Biography:

Colonel Peta Mantel AM is an infectious disease epidemiologist and senior health security leader with over 30 years' experience across public health, medical intelligence, pandemic preparedness and health diplomacy. She has worked as a senior environmental health officer for the United Nations in Timor Leste and the Peace Monitoring Group in Bougainville, Papua New Guinea. She has also deployed as the Deputy Chief Inspector of the biological weapons inspection team in Iraq in 1998 as part of the United Nations Special Commission on Iraq. Over the past decade she has focused on infectious disease threats to deployed personnel and has led the health intelligence support to Government. In 2020, she was seconded to the Commonwealth Department of Health to lead the COVID-19 epidemiology team in the National Incident Room. She currently serves as Defence's representative on Australia's Human Animal Spillover and Emerging Diseases Scanning Group. She holds a

Master of National Security and Strategy, a Master of Clinical Epidemiology with Merit, a Master of Applied Science (Environmental Health), and a Bachelor of Science. In 2021, she was appointed a Member of the Order of Australia for services to medical intelligence, epidemiology and health leadership.

Aim

This presentation describes the development of the Australian Defence Force's (ADF) strategic Force Health Protection (FHP) capability, highlighting key achievements in its first year of operation, and outlines future priorities. The Directorate of Force Health Protection (DFHP) represents an integrated and interoperable public health capability aligned with Australian state and territory civilian systems and Five Eyes partners, designed to enhance force readiness, generation and preservation.

Background

FHP in the ADF is defined as the measures taken to promote, improve, conserve and restore the physical and mental health of personnel to preserve and strengthen operational readiness. Historically, the ADF has lacked a dedicated, centralised public health capability, limiting its ability to systematically anticipate, analyse, and mitigate population-level health risks. This gap has constrained proactive risk management in key areas such as injury prevention, communicable disease control, and environmental health. The establishment of DFHP enhances our capability and aligns the ADF with comparable international military approaches and the Australian civilian public health sector.

Methods

DFHP has been structured across four core teams: Health Surveillance, Communicable Disease Control, Musculoskeletal Injury Prevention, and Environmental Health. The Directorate is staffed by a multidisciplinary and scalable workforce comprising ADF personnel, Australian Public Service staff, reservists, and contracted specialists. This workforce brings combined expertise in epidemiology, public health, environmental health, injury prevention, and health promotion, enabling an integrated, evidence-based approach to force health protection.

Current priorities

A primary focus is the establishment of an ADF health surveillance capability to improve visibility of health trends and enable early identification of risks to the health of the force. While elements of health surveillance have historically existed across the ADF, this capability aims to centralise, coordinate, and enhance these activities into a more systematic and

routine function. The surveillance system is intended to be adaptable, scalable, and interoperable.

DFHP also recognises prevention as a critical component of combat power and force readiness. A new health promotion and communications program is being developed to provide a dedicated platform for educational resources and engagement activities aimed at supporting personnel and commanders to optimise health and readiness. Together, these initiatives represent an integrated approach to understanding, managing, and mitigating health risks across the force.

Future priorities

Ongoing priorities include enhancing evidence-informed decision-making, supporting operational readiness, and delivering targeted prevention programs that improve baseline health across the force. Continued capability maturation will focus on meeting stakeholder needs and addressing persistent drivers of attrition and reduced employability and deployability.

Conclusion

DFHP is rapidly maturing into a doctrine-aligned, fully staffed, and interoperable capability that addresses a longstanding gap in the ADF health system. Through the implementation of robust surveillance systems, a strong emphasis on prevention, and alignment with civilian and international partners, DFHP is delivering an integrated public health function that enhances force readiness, resilience, and operational effectiveness in increasingly complex environments.

The opinions expressed in this presentation are that of the authors and not the Department of Defence.

From Demystification to Capability: Reframing Independent Medical Examinations in Military and Veteran Health

[Dr Richard Magtengaard](#), [Dr Charles Phillis](#)

1 mlcoa

Biography:

Dr Richard Magtengaard is a Consultant Psychiatrist and CMO with extensive experience in trauma-informed care, including complex trauma, PTSD, anxiety disorders, and co-occurring physical health conditions. His clinical background spans adult and child, rural, consultation liaison, and old-age psychiatry, providing him with broad expertise in managing diverse and complex presentations.

He provides independent psychiatric assessments and has consolidated experience in Department of Veterans' Affairs (DVA) impairment and compensation assessments, including IL, PI, and ARETRO matters.

Additionally, Dr Magtengaard brings significant leadership and governance experience, contributing to multidisciplinary team development, service planning, and clinical governance. He has been actively involved in advisory and board roles, supporting the development of veteran mental health services at both organisational and national levels.

Dr Charles Phillis is a Consultant Chief Medical Officer, Certified Health Manager and Occupational Medical Practitioner who formerly consulted as Contracted Rehabilitation & Compensation Medical Advisor to the Department of Veterans' Affairs, and as a DMA Government Contracted Doctor for Services Australia (formerly the Department of Human Services). Dr Phillis is an experienced Certified Impairment Rater, skilled in the provision of permanent impairment assessments. Dr Phillis has considerable experience in Health Leadership/Medical Administration and provides Chief Medical Officer Consultancy services pertaining to Health Management, Clinical Governance, Risk, Digital Health and Clinical strategy. Dr Phillis is a Designated Aviation Medical Examiner and Medical Review Officer (AMROA) in active clinical occupational medicine practice.

Independent Medical Examinations (IMEs) sit at the intersection of clinical assessment, medicolegal opinion, and organisational decision-making. Within military and veteran health, they are often experienced as complex, high-stakes assessments requiring clinicians to navigate diagnosis, causation, functional impairment, and prognosis, while maintaining objectivity and professional integrity. At the same time, IMEs are frequently constrained by a narrow focus on compensation and liability, limiting their broader potential to support recovery, rehabilitation, and workforce readiness.

This dual-presenter session offers an integrated and practical reframing of IME practice, combining contemporary psychiatric formulation with governance-driven approaches drawn from high-risk industries. Together, the presenters demonstrate how IMEs can evolve from being retrospective instruments of adjudication into forward-looking tools that enhance both individual recovery and organisational capability.

Dr Richard Magtengaard introduces a structured clinical framework that integrates Megan Fry's Military Mode Model and the emerging concept of moral injury into psychiatric IME practice. These models provide a clinically grounded way

to understand how military culture, identity, and operational conditioning shape symptom presentation, behaviour, and functional capacity. Through case-based examples, this framework assists clinicians in distinguishing adaptive military responses from psychiatric disorder, strengthening diagnostic formulation and improving clarity in opinions regarding causation, permanence, and impairment. Emphasis is placed on delivering assessments that are trauma-informed, clinically rigorous, and suitable for medicolegal contexts.

Building on this foundation, Dr Charles Phillis expands the role of the IME beyond diagnosis and impairment into a strategic decision-support function. Drawing on governance-led IME models from sectors such as emergency services, mining, and workers' compensation, the session explores how quality assurance systems, standardised methodologies, clinician selection, and expert peer review enhance the reliability and defensibility of medical opinions. These principles are reframed for a military audience through parallels with Command and Control structures, ensuring the right expertise, processes, and information support effective decision-making and mission outcomes. In this context, mlcoa is reinterpreted as an evidence-informed pathway that supports recovery, functional restoration, and sustained operational contribution.

The session highlights how integrating contemporary psychiatric insight with robust IME governance enables more meaningful, consistent, and actionable assessments. It also reinforces that effective IMEs should not simply describe impairment but actively contribute to rehabilitation planning, safe return to work, and long-term workforce capability.

Attendees will gain practical strategies to:

- Conduct structured, clinically robust, and defensible IMEs in military and veteran populations
- Incorporate Military Mode and moral injury into diagnostic formulation and opinion writing
- Improve confidence in assessing causation, functional impairment, and prognosis
- Apply governance frameworks that enhance quality, consistency, and interoperability
- Use IMEs as tools to support rehabilitation, recovery, and workforce readiness

As military medicine continues to evolve, there is a growing need for assessment approaches that reflect both the complexity of service-related experiences and the operational demands of modern defence organisations. This session provides attendees with

practical, transferable tools to enhance both the clinical quality and strategic value of IMEs.

From Pilot to Practice: The Evolution of IMPACT

Dr Alan Turner¹

¹ Royal Australian Air Force, Newcastle, Australia

Biography:

Wing Commander Alan Turner, OAM is an Emergency Physician, Royal Australian Air Force Medical Officer and the Principal Medical Instructor at 294 Squadron.

Alan has served in the Royal Australian Air Force for more than 30 years across permanent and reserve service. His clinical and professional interests include emergency medicine, retrieval medicine, aerospace medicine, military medical education, simulation, human performance and clinical readiness.

He is the founder and project lead for Integrated Medical high-Performance, high-Acuity Clinical Training (IMPACT), a high-acuity simulation and team training activity designed to prepare Defence healthcare personnel for operational clinical practice. He is also involved in the development of accredited in-house Advanced Life Support training for Defence clinicians through 294 Squadron's collaboration with Resuscitation Australia.

In 2025, Alan was awarded a Winston Churchill Fellowship to investigate advances in simulation and scenario-based military medicine. In 2026, he was awarded the Medal of the Order of Australia for meritorious service in the development of health capability for the Royal Australian Air Force.

Integrated Medical high-Performance, high-Acuity Clinical Training (IMPACT) was initially developed as a proof-of-concept activity to address a recognised clinical readiness gap for Air Force clinicians. While civilian clinical placements and externally delivered civilian courses remain valuable, they cannot reliably provide exposure to the high-acuity, low-occurrence presentations, team dynamics and operational constraints most relevant to military healthcare. IMPACT was specifically designed to provide exposure to these scenarios through immersive, team-based simulation.

Since the pilot activity in April 2024, IMPACT has evolved substantially. What began as a resource-intensive, 10-day program has matured into a more sustainable 6-day model, allowing the activity to remain educationally rich while becoming more practical to deliver, staff and repeat. IMPACT has

expanded beyond its original Air Force focus to include tri-service faculty and participants, engaged with specialist operational health elements and generated strong interest from at least one allied nation. Despite 294SQN now delivering four iterations per year, demand continues to grow and now outstrips available course capacity, reflecting both the relevance of the model and the broader appetite for high-quality, operationally contextualised clinical readiness training.

Participant feedback has consistently highlighted the value of IMPACT's realistic scenarios, multidisciplinary team structure, psychologically safe learning environment and focus on non-technical factors such as clinical leadership, communication, decision-making and performance under pressure. The program has also provided an important faculty engagement and development platform, supporting the growth of a cadre of enthusiastic SERCAT 3-7 clinicians experienced in military simulation, debriefing and medical education.

The transition from ten to six days has improved sustainability considerably but has also required the removal or compression of several important clinical and operational topics from the core curriculum. The next phase of IMPACT development will therefore need to consider how these topics can be reintroduced or delivered through a modular or decentralised approach, while preserving the core philosophy of immersive, high-acuity, team-based training.

This presentation will review how far IMPACT has come, summarise key lessons from its evolution and outline options for the next phase of development. In the context of shifting geopolitical risk, interoperability requirements and the need for resilient healthcare teams, IMPACT offers a practical model for building clinical readiness deliberately rather than relying on opportunistic exposure alone.

From Valetudinaria to Role 2: Continuity and Evolution of Roman Military Medical Principles in Modern ADF Health Support

SQNLDR Ben James¹

¹ RAAF, Amberley, Australia

Biography:

With over 20 years of service as a Royal Australian Air Force (RAAF) nurse, James has built a career in military healthcare, combining operational experience with clinical expertise. He holds Bachelor degrees in

Nursing and Science (Macromolecular and Cellular Biology), providing a strong foundation in both practical care and biomedical science.

James has deployed on operations to Afghanistan and across the Middle East Region, where he delivered care in austere and high-tempo environments. His experience includes participation in multiple Aeromedical Evacuation (AE) missions, supporting the safe transport of critically ill and injured personnel while maintaining high standards of in-flight clinical care.

A highlight of his professional development was being awarded Distinguished Graduate of the United States Air Force Flight Nurse Course, reflecting both his clinical excellence and leadership in aeromedical operations. Throughout his career, he has contributed to the advancement of military health capability and the training of others within Defence. He was also involved in bring the BlueRoom extended reality simulator to the Air Force.

Outside of his professional role, James is a self-described history enthusiast, with a particular interest in military history, reflecting a broader appreciation for the evolution of warfare and military medicine.

Military medicine has evolved markedly from antiquity to the present, yet many underlying principles remain consistent. The Roman Army offers one of the earliest examples of an organised medical support system embedded within military operations, particularly in battlefield care and wound management. By comparison, the modern Australian Defence Force (ADF) employs a highly structured, doctrine-driven framework articulated in Land Warfare Doctrine Health Support to Operations and NATO Allied Joint Medical Support Doctrine (AJMedP-1). Although ADF health support reflects significant advances in technology and organisation, it can be understood as a scientific and doctrinal evolution of Roman practice, especially in battlefield care, evacuation, triage, preventive medicine, and wound management.

The Romans institutionalised healthcare through the integration of medici within units and the establishment of valetudinaria, early military hospitals designed for treatment, recovery, and return to duty. This system reflected a pragmatic recognition of health as a contributor to combat effectiveness. However, Roman methods were largely experiential rather than formally codified. In contrast, ADF health support operates along a structured Role 1–2 continuum, ensuring a seamless progression from point of injury to definitive care. This represents a shift from practical adaptation to standardised, doctrine-led capability.

Roman battlefield care shows notable parallels with modern Tactical Combat Casualty Care (TCCC). Medici prioritised early intervention, understanding that immediate treatment improved survival. Their wound care practices included haemorrhage control, removal of embedded weapons, and early debridement. They used substances such as honey, vinegar, and wine for cleaning wounds—materials now recognised for antimicrobial properties. Organic packing materials, including wool and even stale or mouldy bread, were used to absorb fluid and protect injuries. These empirical approaches closely resemble modern wound packing techniques using sterile gauze or haemostatic dressings and anticipate later antimicrobial developments.

Roman dressings were layered and practical, combining absorbent materials such as wool bandages, antiseptic agents like vinegar and wine, and protective substances including olive oil and honey. The use of spider webs to encourage clotting and cauterisation to control bleeding demonstrates an early, if rudimentary, approach to haemostasis. These methods have clear conceptual equivalents in modern damage control resuscitation, including haemostatic dressings, antiseptic irrigation, electrocautery, and advanced wound products. Despite lacking germ theory, Roman practices reveal an emerging understanding of infection control and post-treatment care.

Evacuation practices further illustrate continuity. Roman forces used stretcher-bearers and carts to remove casualties from the battlefield, recognising that prompt evacuation preserved life and morale. Modern ADF doctrine formalises this principle through integrated CASEVAC and MEDEVAC systems and emphasises rapid treatment timelines such as the “golden hour.” Similarly, Roman triage prioritised soldiers based on survivability and likelihood of returning to duty. While modern NATO triage systems are more systematic and ethically structured, they reflect the same utilitarian basis.

Preventive medicine also highlights enduring principles. Roman sanitation, camp design, and water management reduced disease and protected force strength. These observation-based practices underpin modern Force Health Protection, which now incorporates environmental health measures, hygiene, and epidemiology into operational planning. Although Roman methods lacked scientific explanation, their effectiveness prefigures modern preventive strategies.

Roman surgical capability, including debridement, amputation, and the use of specialised instruments, further demonstrates continuity. Though constrained

by available technology, the emphasis on early intervention aligns with modern damage control surgery principles.

In sum, Roman military medicine established enduring foundations: early intervention, structured care, organised evacuation, pragmatic triage, and preventive health. The ADF refines these concepts through doctrine, scientific knowledge, and advanced technology. While tools and understanding have evolved, the fundamental aim—preserving life and sustaining combat power—remains unchanged.

Future Medical Force Design for Evacuation-Denied, Drone-Dominated Warfare: The Role of SABRE Teams

Professor Mansoor Khan¹, Mr Jonathan Kendrew

¹ Iqarus Gulf Fz Llc, United Arab Emirates

Biography:

Professor Mansoor Khan is a trauma and humanitarian conflict surgeon whose career spans frontline medicine, executive leadership, entrepreneurship, and investment. His work uniquely bridges the high-stakes precision of the operating theatre with the strategic demands of global organisations, reflecting a rare ability to lead across both clinical and corporate arenas.

Internationally recognised in the surgical field, Professor Khan has extensive experience in trauma care, complex surgical environments, and austere humanitarian settings. He currently serves as Regional Medical Director at Iqarus, where he provides clinical leadership and operational oversight across diverse regions. In this role, he is responsible for ensuring the delivery of high-quality medical services in challenging environments, guiding multidisciplinary teams, shaping clinical governance frameworks, and aligning medical operations with broader organisational strategy.

His career is defined by adaptability, disciplined execution, and a deep commitment to impact. Whether advancing surgical care in high-risk settings, leading regional medical operations, advising ventures, or investing in innovative projects, he brings a consistent philosophy: innovation grounded in experience, empathy informed by service, and an uncompromising pursuit of excellence.

His work is marked by measurable outcomes and transformative influence, establishing him as a

trusted leader and multidisciplinary professional with a truly global perspective.

Modern near-peer conflict is rapidly reshaping the feasibility of casualty evacuation. Persistent drone surveillance, precision strike capability, and electronic warfare are rendering traditional air, ground, and rail evacuation pathways unreliable or untenable early in conflict. Emerging evacuation modalities, including UAV-assisted extraction and autonomous platforms, are likely to provide only transient advantage before adversary countermeasures neutralize them. In this environment, evacuation denial must be considered a predictable operational constant rather than a contingency.

This paradigm shift necessitates a fundamental redesign of military medical systems, prioritizing forward-deployed, mobile surgical capability over reliance on rear-echelon facilities. We propose the Surgical Austere Battlefield Resuscitation and Extraction (SABRE) Team as the foundational unit for future force design. This four-person team, comprising a surgeon, an anaesthetist, and two highly trained combat medical practitioners, is optimized for mobility, low signature, and independent operation within contested environments.

SABRE Teams are designed to deliver rapid hemorrhage control, vascular stabilization, and extremity trauma management at or near the point of injury, while maintaining the capacity for prolonged field care in the absence of timely evacuation. Their small footprint enables dispersion across the battlespace, enhancing survivability and system resilience compared to traditional, centralized medical nodes. This distributed architecture mitigates the risk of catastrophic system failure and ensures continuous clinical reach despite dynamic threat conditions.

While opportunistic integration with evacuation assets remains essential, SABRE Teams are structured to operate under the assumption of delayed or absent extraction. This requires expanded competencies in prolonged care, physiological optimization, and autonomous clinical decision-making within tactically constrained environments.

The adoption of SABRE Teams aligns medical capability with operational reality, preserving the ethical imperative to deliver timely, life-saving intervention in evacuation-denied settings. Embedding these teams within maneuver elements and designing force structures around mobility, dispersal, and survivability will be critical to maintaining combat casualty survival in future warfare

Governance in Complex Systems - The Power of Being Wrong

LTCOL Tara Miller¹

¹ Department Of Defence, Australia

Biography:

LTCOL Miller is a South Australian Army officer with 20 years of service, currently Deputy Director Governance in Defence Mental Health and Wellbeing. She leads the governance framework supporting delivery of the Defence and Veteran Mental Health and Wellbeing Strategy 2025–2030, the first interdepartmental strategy co-designed with the Department of Veterans' Affairs.

Her interests include international relations, health, people policy, women's leadership, and logistics. She has deployed multiple times to the Middle East, coordinating regional pharmaceutical supply and delivering clinical care to Australian and coalition personnel. In 2024, she was one of two Australians selected for the Senior Defence Officials Course in Vietnam, strengthening her regional awareness and cultural sensitivity. As Operations Officer, 3rd Health Support Battalion, she coordinated Army Reserve health support during the 2019–2020 bushfires and COVID-19 response.

LTCOL Miller began her career as a Pharmaceutical Officer and has served in diverse roles including Recruiting Officer, Training Officer, Officer Commanding, and Operations Officer. Her civilian career spans pharmacy, logistics, procurement, and consulting, alongside running a small business.

She holds a Bachelor of Pharmacy and a Bachelor of Organisational Leadership, and enjoys family life, coaching netball, reading, and creative pursuits.

We often celebrate confidence, certainty and expertise. Leaders are expected to have answers, professionals are expected to apply best practice, and organisations are expected to demonstrate results. Yet many of the most significant advances in health, science and public policy have occurred because individuals and institutions were willing to challenge accepted wisdom and change course when new evidence emerged.

This presentation explores what happens when governance meets complexity. Drawing on the Cynefin framework, it examines the difference between clear, complicated and complex systems, and why approaches that work effectively in predictable environments can fail when cause and effect are only understood in hindsight. While many governance systems are designed around

planning, prediction and control, some of the most important challenges facing modern organisations exist in environments characterised by uncertainty, emergence and constant change.

Through a series of engaging case studies, the presentation explores how evidence evolves and why our understanding of "best practice" is often temporary rather than permanent. The changing role of aspirin in cardiovascular disease prevention provides a powerful example of a healthcare system willing to revise decades of accepted practice as new evidence emerged. Similarly, the dramatic reduction in crime observed in New York during the 1990s continues to generate debate. Was it policing reform, demographic change, economic factors, family planning policies, the removal of lead from fuel, or a combination of all of these? Decades later, experts continue to disagree. These examples highlight a common challenge in complex systems: outcomes rarely have a single cause, and certainty is often far less attainable than we would like to believe.

The discussion then turns to contemporary health and wellbeing challenges. Whether addressing workforce wellbeing, mental health, safety culture or organisational performance, leaders are frequently asked to demonstrate impact and prove that a particular intervention caused a particular outcome. Yet these outcomes are often shaped by a complex interaction of leadership behaviours, organisational culture, workload, social influences, individual circumstances, policy settings and external factors. In such environments, simplistic measures of success and linear assumptions about causation can create an illusion of certainty that exceeds what the evidence can genuinely support.

Rather than viewing uncertainty as a weakness to be eliminated, this presentation argues that adaptive leadership is a critical governance capability. The willingness to question assumptions, update beliefs, test new approaches and respond to emerging evidence is not a failure of expertise - it is the foundation of learning, innovation and continuous improvement. Organisations that become overly attached to certainty risk defending outdated assumptions long after the evidence has changed. Those that remain curious, reflective and adaptable are better positioned to navigate complexity and achieve meaningful outcomes.

Combining insights from governance, healthcare, behavioural science and public policy, this session challenges participants to rethink how they approach evidence, decision-making and accountability in complex systems. It offers practical reflections on governing in environments where attribution is

difficult, unintended consequences are common and learning may be more valuable than certainty.

In a world of increasing complexity, the organisations most likely to succeed may not be those that are always right. They may be those that recognise they are wrong sooner, learn faster than their environment is changing, and have the courage to adapt accordingly.

Growing beyond trauma. Promoting posttraumatic growth literacy and skills in workgroups exposed to traumatic events

Ms Jennifer Wheeler¹

¹ Department of Defence, Australia

Biography:

Jennifer Wheeler is a registered psychologist and experienced manager, who has worked in the Australian Public Service for over two decades. For thirteen years, Jennifer held the role of Director Navy Psychology in the Department of Defence. In this role, Jennifer managed and oversaw the delivery of psychology services in Navy, in addition to the development and implementation of mental health policy, strategic plans and programs. Jennifer provided high-level contribution and advice to the Royal Commission into Defence and Veterans Suicides, including being a Commonwealth expert witness on two occasions.

Jennifer was selected for the Sir Roland Wilson Foundation scholarship in February 2023 to complete her Australian National University PhD program in posttraumatic growth. Jennifer's PhD program is focused on measuring and promoting posttraumatic growth literacy and skills in workgroups with trauma-exposed roles. Jennifer completed the Sir Roland Wilson scholarship on secondment from the Department of Defence.

Workgroups, such as the military, emergency service personnel and healthcare workers, can be exposed to potentially traumatic events through their work roles. Historically, research has focused on the development of mental disorders following exposure to a traumatic event. Focusing on a pathogenic framework following a traumatic event, however, may not fully capture or reflect an individual's experience or functioning post-trauma. A growing body of research has demonstrated that some trauma survivors can experience positive psychological changes following a traumatic event.

Positive adaption following a traumatic event has been termed posttraumatic growth (PTG).

A key reason for increasing awareness of, and promoting PTG, are the mental health and wellbeing outcomes which are attributed to growth. Over the longer-term, PTG has been shown to lessen the likelihood of trauma-related mental health problems and can lead to a higher satisfaction with life. Research has found PTG can also offer strong protective elements, including a reduction in suicidal ideation. Research is increasing understandings of how an individual can grow and transform following a traumatic event. This work includes developing programs to promote PTG, following exposure to a traumatic event.

This presentation will detail a research study that systematically developed and evaluated a proactive-focused PTG psychoeducation and skills training program, titled PTG through Education, Growth mindset and Emotion regulation (PTG-EdGE), within a military population. The PTG-EdGE program aims to increase participants' PTG literacy and confidence in five skills, that have been demonstrated to promote growth.

A pragmatic controlled trial of the pilot PTG program was conducted in a sample of 329 Australian Defence Force Academy (ADFA) Officer Trainees. Principal findings from the evaluation will be presented, including program acceptability and changes in participants' PTG literacy and confidence using in five skills at three measurement occasions: baseline, post-test and 10-weeks follow-up. Finally, this presentation will discuss key PTG considerations for mental health practitioners who support workgroups exposed to traumatic events.

Healing Ties or Strategic Lies – Measuring the Effectiveness of Health Diplomacy

Colonel Peta Mantel AM¹

¹ Australian Army, Canberra, Australia

Biography:

Colonel Peta Mantel AM is an infectious disease epidemiologist and senior health security leader with over 30 years' experience across public health, medical intelligence, pandemic preparedness and health diplomacy. She has worked as a senior environmental health officer for the United Nations in Timor Leste and the Peace Monitoring Group in Bougainville, Papua New Guinea. She has also deployed as the Deputy

Chief Inspector of the biological weapons inspection team in Iraq in 1998 as part of the United Nations Special Commission on Iraq. Over the past decade she has focused on infectious disease threats to deployed personnel and has led the health intelligence support to Government. In 2020, she was seconded to the Commonwealth Department of Health to lead the COVID-19 epidemiology team in the National Incident Room. She currently serves as Defence's representative on Australia's Human Animal Spillover and Emerging Diseases Scanning Group. She holds a Master of National Security and Strategy, a Master of Clinical Epidemiology with Merit, a Master of Applied Science (Environmental Health), and a Bachelor of Science. In 2021, she was appointed a Member of the Order of Australia for services to medical intelligence, epidemiology and health leadership.

This presentation examines the development of a conceptual framework for assessing the effectiveness of health diplomacy. Drawn from my recent thesis – *Healing Ties or Strategic Lies? Navigating China's use of Health Diplomacy in the Southwest Pacific* – the research addresses a critical gap in both global health and international relations literature. More specifically, it addresses the absence of an established methodology for evaluating whether health diplomacy initiatives genuinely strengthen health systems or solely function as instruments of geopolitical influence.

Health diplomacy is positioned at the intersection of global health governance, foreign policy and strategic competition. While traditionally associated with humanitarian assistance and international cooperation, it is now also employed as a mechanism of soft power projection, strategic influence and legitimacy building. China's use of health diplomacy through its Belt and Road Initiative and Health Silk Road provides a contemporary example of this evolution. In the Pacific, Beijing's activities include the construction of hospitals, the deployment of medical teams and hospital ships, vaccine diplomacy, and workforce training programs. These initiatives often produce immediate health gains, yet questions arise regarding transparency, sustainability, sovereignty and long-term resilience.

The presentation will outline the methodology developed to evaluate these competing dimensions of health diplomacy. Existing literature provides broad definitions of global health diplomacy and extensive discussion of soft power theory, yet offers limited guidance on how to systematically assess the quality or strategic implications of health engagement. To address this gap, I developed an original evaluative framework that integrates principles from both diplomacy and health governance.

The framework was constructed through an exploratory literature review spanning global health diplomacy, governance theory, humanitarian medicine, soft power and international relations. It combines traditional diplomatic concepts, such as legitimacy, negotiation and cooperation, with health governance principles including accountability, evidence-based policy and systems strengthening. The resulting framework identified seven interrelated criteria for assessing health diplomacy initiatives: mutual benefit; respect for sovereignty and collaboration; transparency and accountability; evidence-informed policy; global solidarity and cooperation; sustainability and long-term vision; and cultural sensitivity and ethics.

The presentation will demonstrate how these criteria can be operationalised to compare external health engagements and identify whether programs primarily support recipient-state resilience or reinforce dependency and strategic influence. Using examples from Fiji and Papua New Guinea, it will show how visible health gains may coexist with governance vulnerabilities, debt exposure and long-term reliance on foreign systems and expertise. The framework enables a more nuanced understanding of health diplomacy beyond purely humanitarian narratives.

The methodology has broader relevance beyond single state actors and the Pacific region. It offers a practical analytical tool for policymakers, military medical planners, development agencies and global health practitioners seeking to evaluate the strategic effects of international health engagement in contested regions. In an era increasingly shaped by pandemics, climate insecurity and geopolitical competition, the ability to critically assess health diplomacy is becoming an essential component of regional health security and strategic policy analysis.

This presentation contributes to military medicine and health security by proposing a structured methodology for measuring the effectiveness, legitimacy and strategic consequence of health diplomacy. It argues that 'good' health diplomacy must extend beyond short-term clinical delivery to strengthen sovereignty, local ownership and sustainable health system resilience.

Health Considerations - Human Security within Military Operations

WGCDR Janine Tillott¹

¹ Defence, Australia

Biography:

WGCDR Janine Tillott, Dental Officer joined the RAAF in 1995. During her career she has completed many roles from clinical service delivery and Defence Senior Aviation Dentist, to being appointed to Command of Joint Health Unit Southern New South Wales (2016-17). She has held Staff Officer roles in Policy, eHealth, Future Health, Career Management and AFHQ. WGCDR Tillott has deployed as the Commander Australian Contingent Exercise PACIFIC PARTERSHIP (2007), officer-in-charge (OIC) Australian contingent Exercise PACIFIC ANGEL (2015), and was instrumental in the initiation, development and piloting Exercise KUMMUNDOO (2015). From Oct19-May20 she deployed as OIC Health, Operation ACCORDION in the Middle East Region. On return to Australia she was seconded to COVID Operations Cell and Health liaison officer to COVID Task Force. WGCDR Tillott posted as the Air Force Gender Advisor (2022-24), being responsible for AF implementation of UNSCR 1325+ Women, Peace and Security where she was awarded the Conspicuous Service Cross in 2025. She represented RAAF as a Gender Advisor on Exercise COPE NORTH and PIRAP JABIRU 2022, international staff talks and in overseas combined Exercises.

WGCDR Tillott is happily married with two adult children. She is an endorsed Dental Sedationist and has completed a Masters in Health Management.

The nature of military operations is evolving. Commanders are seeking any advantage that will improve operational effectiveness, enhance mission success, heighten personnel security and safety, reduce risk to personnel – lessening casualties, limit the duration of mission, and expedite a return to peace and stability. Gender in military operations (GiMO) is one aspect of Human Security that the Australian Defence Force (ADF) is implementing in order to enhance our military's effectiveness. GiMO is intrinsic to all aspects of Defence. It impacts Health from operational planning to health service delivery pre, during and post operation.

This presentation explores the requirement for military health professionals to understand the complex human terrain in which we operate. It explores how every health professional has an opportunity to impact operational effectiveness through the application of aspects of human security

in health planning and health care delivery. This will be presented through three key components:

1. How did it all start? The release of the United Nations Security Council Resolution (UNSCR) 1325 Women, Peace and Security (WPS) in 2000 acknowledged that women, girls, men and boys experience armed conflict differently and that women and girls are often disproportionately affected by conflict. UNSCR1325 was adopted by the Australian Government in 2012 with the release of Australia's National Action Plan on WPS; and implemented in Defence in 2020 with the Gender, Peace and Security Mandate.
2. Why is GiMO important? Presentation of data released in the Security General Report on Conflict-related sexual violence (CRSV) released in August 2025 notes a 25% increase in CRSV from the previous year with over 4600 survivors reporting violence. The data highlights women, girls, men, boys, including persons with diverse sexual orientation and/or gender identities, racial and ethnic minorities, and persons with a disability, were among the victims, ranging in age from one to 75 years old. It also emphasises that the majority of victims are unable to reach health care within the 72-hour window when life-saving and specialised services are most needed. Additionally, we will discuss data from humanitarian crisis released by UN Women including that 70% of women experience gender based violence (GBV) in a humanitarian crisis context compared with 35% world-wide.

Understanding the implications of this data highlights the importance of human security in operational planning including health planning. Noting that a thorough understanding of all aspects of the population ie age, gender, ability, minority groups etc within an area of operation including the second and third order effects of military actions on civilian populations is essential.

Additionally, we will discuss how ADF personnel may experience moral injury, PTSD and other adverse health effects as a result of encounters with CRSV and GBV and how health personnel must both prepare Defence members for such incidents and be prepared to provide support post incidence.

3. What actions can health planners and clinicians undertake? A broader discussion including case studies will highlight the complexity in planning and how gendered intelligence assists health planners developing Defence actions and activities. We will discuss a number of recent Operations and expand on lessons learnt as Defence integrates Gender, Peace and Security

strategies into operational planning, noting the complexity created for clinicians, when gendered health intelligence is not considered in planning operations. We will conclude by discussing the importance of incident reporting to reduce the psycho-social risk to personnel. This will highlight the important role that health personnel play as part of this process and how this enhances mission success by maximising Defence's most important asset – people.

Identity, Purpose, Belonging and Wellbeing as Markers of Long-Term Functional Recovery

Mr Daniel Vincent¹

1 Trojans Trek, Upper Kedron, Australia

Biography:

Dedicated to supporting military veterans, Daniel, a former Australian Army Soldier with 16 years of service, is a passionate advocate for their successful transition to civilian life. He has pioneered scholarship and mentoring programs, shaping industry-specific cybersecurity initiatives. He has co-authored three papers on education, employment, and wellbeing. With expertise in mental wellness, education, and employment, Daniel chairs Trojans Trek, fostering self-discovery and introspection among veterans. His diverse roles include COO, Director of Strategy and Innovation, National Director of Health and Wellbeing, and Director of the Monaro Community Access Service Board. Combined with his Master's in Business and a Graduate Certificate in Mental Health Practices, Daniel's commitment is evident in his multifaceted contributions.

Despite decades of investment in evidence-based psychological interventions, Australian veterans continue to experience disproportionately high rates of post-traumatic stress disorder (PTSD), major depressive disorder (MDD), social isolation, unemployment, and suicide. While contemporary psychological treatments have demonstrated efficacy in reducing symptoms, they remain predominantly grounded in a medical model that conceptualises recovery through pathology, diagnosis, and symptom reduction. Trojans Trek argues that such approaches insufficiently account for the cultural identity, lived experience, meaning-making, and embodied nature of operational trauma.

Drawing upon phenomenology, Life Design theory, social prescribing, recovery-oriented practice, and peer support literature, Trojans Trek proposes a

culturally congruent framework that redefines both the assessment and treatment of operational trauma. Rather than beginning with psychiatric diagnosis, the model begins with the individual's lifeworld, their identity, values, purpose, relationships, emotional literacy, and connection to community. Treatment is delivered through a peer-led, clinician-supported wilderness intervention that integrates experiential learning, narrative reconstruction, mentoring, and future-oriented life planning within a psychologically safe environment. This approach reflects the Trojans Trek model, in which lived experience forms the foundation of therapeutic engagement and participants co-design a 12-month recovery plan grounded in personally meaningful goals.

Trojans Trek further proposes a novel multidimensional assessment framework that shifts evaluation beyond illness severity towards recovery and human flourishing. In addition to conventional psychological distress measures, outcomes incorporate validated measures of personal wellbeing, self-compassion, thriving, life satisfaction, identity reconstruction, purpose, and social connectedness. Our preliminary program data demonstrates consistent improvements across wellbeing domains, supporting the value of measuring recovery rather than illness alone.

Trojans Trek argues that operational trauma should be understood not solely as a psychological disorder requiring symptom management, but as a disruption of identity, belonging, and purpose requiring holistic reconstruction. By integrating lived experience, phenomenological assessment, positive psychology, and social prescription into a single model of care, this framework represents a potential paradigm shift for veteran mental healthcare.

Introducing Spiritual Wounds and Injuries

Dr Murray Davies¹

1 Wounded Spirit, Canberra, Australia

Biography:

Dr Murray Davies is the CSO of the veterans charity Wounded Spirit. Wounded Spirit helps veterans who have experienced spiritual damage resulting from military service. A former Australian Army Lieutenant Colonel, Murray is a graduate of the Royal Military College and Australian Army Staff College. Murray's PhD from the University of Divinity was on 'The Influence of Spiritual Wounds and Injuries on Australian Defence Force Veterans.' Additionally,

Murray holds a Master's in Theology, Defence and Internal Relations, a Graduate Diploma in Theology and a Bachelor of Arts (Honours).

Military service at any level or of any nature places tremendous stress on the bodies, minds, and souls of Australian men and women who volunteer to serve in the Australian Defence Force (ADF). That a soldier may experience spiritual damage because of their involvement in a traumatic event is not new and indeed has been discussed for many years and under many different headings. In the past forty years, spirituality and trauma in the domain of military service have been principally viewed through the lens of Moral Injury (MI). Although this topic has generated a body of scholarly research and writing, this paper argues that, for a range of reasons, MI is not the most effective means of addressing damage to an individual's spiritual health. Accordingly, scholarship and study in this area has been commenced develop, prove, test, and understand the concept that a loss of faith in or anger with God may trigger or contribute to significant mental health issues. Ultimately, this scholarship and study will need to expand upon, describe, and define this overall concept as the basis for establishing a credible dataset that identifies the scale of the issue within the Australian veteran community. Work done on quantifying rates of post-traumatic stress disorder (PTSD) and MI within the community has made important contributions to determining approaches to managing these issues, as well as providing essential justification for government involvement and support; this must now be replicated in the area of spiritual damage.

The overall aim of this project to date is to establish the influence of Spiritual Wounds and Injuries (SW&I) on ADF veterans. In pursuing this aim, this paper has three subsidiary objectives. The first objective is to define the term "Spiritual Wounds and Injuries" (SW&I). This includes surveying the relevant literature, capturing key source material for the project, and identifying any significant research gaps. The existing literature on Moral Injury (MI) is reviewed, and its management of spirituality is analysed. On this basis, the term SW&I is articulated, described, and defended. In the second objective, the SW&I concept is expanded; the potential causes of SW&I are examined, approaches to assessment and management are considered, and new models are proposed. The third objective of the project focuses on a detailed, specific analysis of its relevance to ADF veterans. The scope of what constitutes an ADF veteran is established, and the influences of ADF culture on SW&I susceptibility, presentation, and management are analysed.

"Is there a medically qualified volunteer onboard?" - Would you volunteer to help?

SQNLDR Alex Leedham¹

¹ 294 SQN, Amberley, Australia

² Virgin Australia, Brisbane, Australia

Biography:

SQNLDR Alex Leedham is a Nursing Officer in the Royal Australian Air Force. After 15 years of full-time service, she transferred to SERCAT 5 to take up employment with Virgin Australia as the Aviation Health Specialist. She continues in her reserve capacity as an Aeromedical Evacuation Instructor at 294 SQN and has a deep passion for training and the growth of the next generation of RAAF Clinicians.

Background

In-flight medical events place clinical decision-making inside one of the most austere settings in civilian transport: a narrow cabin, limited privacy, restricted movement, ambient noise, reduced diagnostic capability, and delayed access to definitive care. These constraints make the contribution of military medical professionals valuable. Military clinicians are trained to deliver calm, structured care in uncertain, crowded, high-pressure environments where the available equipment may not match the clinical problem.

Discussion

The aircraft cabin shares distant similarity with deployed and field medicine. Assessment is performed in an aisle, galley, or seat row, often with the patient seated, surrounded by passengers, and with only basic monitoring. The assisting clinician must establish rapport with cabin crew, identify their credentials and scope, obtain a focused history, assess airway, breathing, circulation, disability, and exposure within practical limits, and convert limited findings into actionable advice for the captain and ground medical support. Military medical professionals bring strengths that align closely with these needs: disciplined triage, comfort with incomplete information, communication under pressure, team leadership, improvisation within protocol, and the ability to prioritise stabilisation over definitive diagnosis. Their experience with command structures also supports clear role allocation, closed-loop communication, and respectful escalation, which are essential when cockpit, cabin, ground medical, and passenger volunteer inputs must be coordinated quickly.

Commercial aircraft medical equipment is necessarily limited. It must be safe for aviation use, compact, lightweight, secure, maintainable, and suitable for use by cabin crew, volunteer clinicians, and other trained responders across different jurisdictions. A typical aircraft may carry first aid kits, oxygen, an automated external defibrillator, infection control supplies, and an emergency medical kit containing basic assessment tools, airway adjuncts, a bag-valve-mask, intravenous equipment, saline, and selected medications such as analgesics, antihistamines, bronchodilators, glucose, adrenaline, aspirin, atropine, lignocaine, and nitrates, depending on regulation and operator policy. This inventory supports initial assessment and stabilisation, not hospital-level care. There is no laboratory testing, imaging, continuous multiparameter monitoring, suction, advanced airway capability, broad formulary, or resuscitation team. The responder must therefore adapt the kit to the patient, while staying within their competence and integrating cabin crew procedures, airline policy, and ground medical advice. This adaptation is important because a single kit must be understandable and usable across several scopes of practice, rather than optimised for one specialist group.

The most common events that military medical professionals can expect to assist with are syncope or near-syncope, dizziness, nausea and vomiting, abdominal pain, shortness of breath, asthma or chronic lung disease exacerbation, chest pain, palpitations, anxiety or panic, seizure, altered mental state, hypoglycaemia, allergic reaction, burns, and symptoms suggestive of stroke or acute coronary syndrome. Less common but high-consequence events include cardiac arrest, severe anaphylaxis, major trauma from turbulence, obstetric complications, psychiatric disturbance, infectious disease concern, and death on board.

Conclusion

Military medical professionals are highly valuable on civilian aircraft because they bring an austere-care mindset to an austere aviation environment. They are trained to work with constrained space, constrained equipment, constrained time, and competing operational risks. This presentation will deliver useful information for conference delegates to assist should they volunteer their medical experience on a civilian flight.

Lessons for Australia from the NATO Blood Panel

BRIG Michael Reade¹

1 Joint Health Command, Ascot, Australia

Biography:

BRIG Michael Reade is an intensive care physician, anaesthetist and clinician scientist, appointed in 2011 as the Professor of Military Medicine and Surgery at Joint Health Command. From 2015-2018 he was additionally the Director of Clinical Services of the 2nd General Health Battalion, and from 2019-2022 he was Director General Health Reserve - Army. Since 2022 he has been Director of the University of Queensland's Greater Brisbane Clinical School, overseeing UQ's 10 Brisbane teaching hospitals, >250 general practices and the university campus. He remains an advisor to Joint Health Command on research and education, represents Australia on the NATO Blood Panel and WHO Blood Supply and Transfusion Working Group, and Chairs the Five Eyes Science & Technology Collaboration Military Medicine Panel. His A\$37 million current research program covers trauma systems design, blood and fluid resuscitation in trauma, and traumatic brain injury.

Mr Paul Naveau is the Director of Health Materiel, Logistics and Pharmacy for Joint Health Command. In that role, held since 2012, he is charged with the delivery and management of health materiel across Defence and is responsible for the engagement with key government agencies and organisations for the delivery of health materiel products and services into Defence.

Blood for transfusion is a critical strategic capability, both to support military operations and to preserve quality civilian healthcare.¹ Worldwide demand exceeds supply even in peacetime: in 2017, 305 million units were needed annually, yet only 272 million units were available. Conflict, such as that in the Russia-Ukraine war, both increases demand through higher blood requirements in trauma and reduces supply due to compromise of resources for collection, processing, storage and transport. Potential negative consequences include more preventable deaths, reduced combat power, erosion of trust in national institutions, and contribution to possible failure of the nation state.

North Atlantic Treaty Organisation (NATO) and Partner Interoperability Advocacy Group (PIAG) nations including Australia seek to ameliorate this situation through policy recommendations made by the NATO Blood Panel. Following finalisation of the draft Standardisation Agreement (STANAG) 2939

Minimum Requirements for Blood, Blood Donors and Associated Equipment in 2025, the Panel has continued to provide guidance to member nations and the European Commission in several areas:

- Awareness of likely transfusion requirements in times of conflict, both for combatants and in threatened civilian healthcare systems.
- Advocacy for investment in, and regulatory approval of, novel transfusion alternatives, such as freeze- or spray-dried plasma, cold-stored and cryopreserved platelets, and fresh / stored whole blood.
- Development of technical protocols to support novel policy for the use of Category 1 (obtained from regulated blood suppliers in NATO and PIAG nations), Category 2 (obtained by NATO / PIAG forces in the Area of Operations, using NATO-mandated protocols), and Category 3 (sourced from a host nation, outside the control of a NATO / PIAG military force) blood.
- Guidance on optimal choices for blood components to be held at the various levels of military medical support, from point of injury to Role 3, when employed in various types of military operation (area denial, low-level stability, and defensive and offensive large scale combat).
- The desirability of harmonising STANAG 2939 with national blood policy and the 2027 European Union Substances of Human Origin (SOHO) regulations, with particular emphasis on removing regulatory impediments to sharing Category 1 blood amongst partner nations.
- Exploration of innovative technical solutions for blood distribution, such as drone delivery.
- The need to specify methods for mandated administrative support, such as transfer and storage of haemovigilance data, and actions on loss or compromise of this data.
- Enhanced resilience of logistic supply chains, in particular identifying critical consumables that would limit blood supply. Investment in local production capacity for such consumables.
- Development of common training packages for military employment of Category 2 blood (formerly termed the “walking blood bank”)

Through its ongoing contribution to the NATO Blood Panel, the Australian Defence Force ensures its national blood policy reflects best-practice and is harmonised with that of our international partners.

References

- Frescaline N, Beckett A, Reade MC. Call to enhance civilian and military blood preparedness. *Lancet*, 2026, 407 (10533), 1053-1054

Military Occupational and Environmental Medicine (OEM): perception versus reality

Dr Neil Westphalen¹

1 Navy, PALMERSTON, Australia

Biography:

Dr Neil Westphalen graduated from the University of Adelaide in 1985 and joined the RAN in 1987. His postgraduate qualifications include Fellowships of the RACGP, AFOEM and ACAsM, an MPH from Curtin University, and a Dip AvMed via King's College London. In July 2025, he completed a history PhD through UNSW Canberra; entitled 'Constant Care: health support for Australian naval operations 1901-1976'. He is also a RAN Staff College graduate.

Commander Westphalen's seagoing service included Swan (III), Stalwart (II), Success (II), Sydney (IV), Perth (II), Manoora (II) and Choules, during which he undertook DAMASK VII, RIMPAC 1996, TANAGER, RELEX II, GEMSBOK, TALISMAN SABRE 2007 and RENDERSAFE 2014. His clinical roles ashore included Cerberus and Penguin, thence Kuttatbul, Albatross, Stirling and the Submarine and Underwater Medicine Unit—West as SMO. Staff positions included Director Health at what became Joint Operations Command, Director Navy Occupational and Environmental Health, Director of Navy Health, Staff Officer 1 Medical Employment Classification Advisory and Review Services, and Fleet Medical Officer. On transferring to the RAN Reserve in 2016, Commander Westphalen undertook staff roles for Exercise KAKADU 16, the Director-General Navy Safety and Environment Policy Coordination, and the Navy Personnel Career Management Agency.

Although Occupational and Environmental Medicine (OEM) has received limited attention within the ADF and its health services, understanding of its perceived versus actual scope of practice continues to remain poor. The aim of this presentation is to explain how and why, rather than simply dealing with the more arcane workplace health and safety hazards, OEM uses a holistic biopsychosocial team-based approach to ensuring workforce health through active prevention, clinical treatment and rehabilitation - all of which are highly relevant to

ADF operational capability, and the personnel that brings them to life.

Moral Challenges in Current Conflicts - War in Ukraine and Perfidious Warfare

Gpcapt Jeff Stephenson¹

1 ADF, Australia

Biography:

GPCAPT Stephenson has thirty-eight years' full-time experience working within Defence Health. He has deployed to East Timor, Bali, Banda Aceh Sumatra and the Middle East.

He is currently the:

- Chair of the ADF Medical Officer Professional & Continuing Development Committee;
- The Clinical Director of Primary Health Care for Air Force Health Reserves;
- A Regional Senior Aviation Medical Officer for the Institute of Aviation Medicine; and,
- The Senior Medical Advisor to RAAF Richmond.

He is a graduate of the Australian War College "Thinking Strategically" course and an observer member on the NATO Interallied Confederation of Reserve Medical Officers. He was selected to attend the Australian War College pilot course on "Strategy in the Australian Region".

GPCAPT Stephenson's current focus is on shaping Defence Health to align with the current geopolitical environment.

"The Russia-Ukraine conflict heralded a new philosophy of warfare. President Volodymyr Zelenskyy tasked the Unmanned Systems Forces of Ukraine (the Birds of Madyar) with eliminating 30,000 Russian soldiers per month. They are now exceeding this. Drones, AI, machine learning and cybersecurity have exponentially changed the battlefield. New iterations of drone technology and counter measures are occurring on a two-monthly cycle. Kill zones now have a 50 km bandwidth, with drones the primary strike tool inflicting 70 per cent of personnel injuries and 75 per cent of equipment and vehicle damage. Perfidious warfare ensues, with maiming and disabling preferred over killing. Deliberate targeting of civilians and health personnel occurs with evacuation systems made redundant and military health facilities regularly overwhelmed. The rules of armed conflict are no longer protective.

GPCAPT Stephenson first spoke of drones being "A Paradigm Change in Military Medicine" in 2023. Here he provides an update on the moral and clinical lessons from the Ukraine conflict. Contemporary takeaways from NATO are applied in our geostrategic region with the theme that "Moral Injury is now ubiquitous in Warfare."

Neural Signatures of Moral Injury: Distinguishing Moral Injury from PTSD in the Changing Operational Environment of the Australian Military

Prof/Dr Matthew Bambling¹

1 ADF, Brisbane, Australia

Biography:

Professor (Retired) Matt Bambling is a Clinical Psychologist, academic, and senior Defence psychologist with over 35 years of experience in clinical, research, and operational psychology. He currently serves as a Wing Commander (WGCDR) in the Royal Australian Air Force and is posted to the Directorate of Air Force Health.

Dr Bambling holds a PhD in the treatment of mood disorders and has led clinical programs, major funded clinical trials, and postgraduate education initiatives across several Australian universities. He has extensive experience working in high consequence operational environments and contributes to Defence initiatives focused on psychological health, resilience, and operational capability.

His clinical and research interests include complex trauma, treatment resistant depression, psychological resilience in high security environments, and moral injury. He has published and presented widely on moral injury and contributes to the development of Australian Defence Force training and treatment frameworks in this area.

Dr Bambling has authored more than 100 peer reviewed publications and continues to advise government, health, and defence organisations on mental health, human performance, and psychological risk in complex operational environments.

Abstract

Although moral injury (MI) and posttraumatic stress disorder (PTSD) frequently co-occur among military personnel and veterans, emerging neuroscientific evidence suggests that MI represents a mechanistically distinct construct. This presentation draws on recent

neuroimaging research to examine the neurological and psychological differences between MI and PTSD and considers the implications for diagnosis and treatment within military medicine.

PTSD is primarily associated with hyperactivation in neural circuits involved in threat detection and fear based responses, including the amygdala, anterior cingulate cortex, and insula. In contrast, moral injury appears to engage neural networks associated with moral reasoning, self-reflection, and social cognition. Functional MRI studies have identified increased activation in regions such as the precuneus, inferior parietal lobule, and inferior frontal gyrus, which are implicated in processing guilt, shame, and violations of deeply held moral values.

Research examining moral autobiographical memory retrieval has also demonstrated dysregulated connectivity between the sensorimotor network (SMN) and the posterior default mode network (pDMN), supporting the view that morally injurious experiences may be encoded as embodied, sensorimotor memories rather than solely through narrative fear based processing. These findings are consistent with clinical observations that MI is frequently associated with moral conflict, perceived betrayal, failed action, or violations of core values that challenge identity, meaning, and moral agency.

Conceptualising moral injury as a subtype of PTSD risks conflating distinct neuropsychological mechanisms and may lead to suboptimal therapeutic approaches. Whereas PTSD treatments commonly focus on fear extinction and exposure based interventions, MI may require therapeutic processes centred on moral repair, existential reconciliation, and values based reintegration.

Within the Australian military context, the operational environment is dynamic and evolving, and contemporary forms of warfare increasingly expose personnel to ethically complex situations that may heighten the risk of moral injury. Distinguishing MI from PTSD is therefore critical for improving diagnostic clarity and guiding more appropriate treatment approaches.

This presentation synthesises emerging neuroscientific and clinical evidence to argue that moral injury represents a distinct response to trauma with its own neural signature, psychological profile, and therapeutic implications. Recognising MI as separate from PTSD may contribute to improved assessment, treatment, and mental health outcomes among Australian military personnel and veterans.

References

- Barnes, H. A., Hurley, R. A., & Taber, K. H. (2019). Moral injury and PTSD: Often co-occurring but mechanistically different. *The Journal of Neuropsychiatry and Clinical Neurosciences*, 31(2), A4–A103. <https://doi.org/10.1176/appi.neuropsych.19020036>
- Buckner, R. L., Andrews-Hanna, J. R., & Schacter, D. L. (2008). The brain's default network: Anatomy, function, and relevance to disease. *Annals of the New York Academy of Sciences*, 1124(1), 1–38. <https://doi.org/10.1196/annals.1440.011>
- Lanius, R. A., Terpou, B. A., & McKinnon, M. C. (2023). How the body remembers: The role of the default mode and sensorimotor networks in moral injury. *Frontiers in Psychology*, 14, 1138047. <https://doi.org/10.3389/fpsyg.2023.1138047>
- Litz, B. T., Stein, N., Delaney, E., Lebowitz, L., Nash, W. P., Silva, C., & Maguen, S. (2009). Moral injury and moral repair in war veterans: A preliminary model and intervention strategy. *Clinical Psychology Review*, 29(8), 695–706. <https://doi.org/10.1016/j.cpr.2009.07.003>
- Lloyd, C. S., Jones, E. P., Brown, A. M., Hutchinson, E., Williams, M., & Adams, R. A. (2021). Moral injury and greater midbrain functional network connectivity in posttraumatic stress disorder. *NeuroImage: Clinical*, 32, 102849. <https://doi.org/10.1016/j.nicl.2021.102849>
- Nash, W. P., Marino Carper, T. L., Mills, M. A., Au, T., Goldsmith, A., & Litz, B. T. (2013). Psychometric evaluation of the Moral Injury Events Scale. *Military Medicine*, 178(6), 646–652. <https://doi.org/10.7205/MILMED-D-13-00017>
- Neria, Y. (2021). Functional neuroimaging in PTSD: From discovery science to precision medicine. *The American Journal of Psychiatry*, 178(6), 479–496. <https://doi.org/10.1176/appi.ajp.2020.20081288>

New Evidence for Whole Blood in Trauma: Understanding the recent SWiFT and TOWAR Trials and their Implications for Defence Transfusion Policy

Dr Elissa Milford¹

¹ Headquarters 2nd Health Brigade, Brisbane, Australia

Biography:

Elissa is an Intensivist and clinician researcher. She is a full-time Intensive Care Specialist on the MSP currently posted to HQ 2 Bde, and works at the Royal Brisbane and Women's Hospital. She also holds honorary academic titles at the University of Queensland and Monash University. Her PhD was on the role of the endothelial glycocalyx in severe trauma, and she is building a research program that spans the management of severe burns, trauma, blood transfusion, military medicine, and endothelial dysfunction in critical illness. She also has a strong interest in the design of novel clinical trials and is currently completing a Masters in Biostatistics. She is an emerging leader in critical care clinical trials, currently leading the Australian sites of the international, multi-centre, Threshold for Platelets (T4P) clinical trial, and is on the management committee of several other large multi-centre clinical trials. She is an active member of the ANZICS Clinical Trials Group community and supervises several student research projects.

Low-titre group O whole blood (LTOWB) has become increasingly incorporated into civilian and military trauma systems despite an evidence base that has, until recently, consisted only of observational studies. The results from these studies have been mixed, with only some reporting improved survival associated with whole blood. However, observational studies are vulnerable to time-dependent and selection biases that can produce misleading estimates of treatment effect. The recent publications of the SWiFT and TOWAR randomised controlled trials provide the highest-quality evidence to date of the effects of LTOWB in traumatic haemorrhage.

Both SWiFT and TOWAR compared the prehospital administration of up to two units of LTOWB with component therapy in patients with major traumatic haemorrhage. Despite having different populations and different trial designs, neither trial demonstrated superiority of LTOWB for their respective primary (SWiFT: a composite of 24h mortality or massive transfusion; TOWAR: 30-day mortality) or secondary outcomes, and safety outcomes were comparable between treatment groups.

Of note, neither trial was designed as an equivalence or non-inferiority trial. Consequently, the absence of a statistically significant difference should not be interpreted as evidence that whole blood and component therapy are clinically equivalent. Rather, the trials found no evidence that the whole blood intervention evaluated was superior under the study conditions.

The biggest limitation of these trials was the low dose of whole blood used. Patients received a maximum of two units of LTOWB before subsequent transfusion reverted to standard component therapy. Whether such limited exposure is sufficient to produce clinically meaningful differences remains uncertain, particularly out to 30-days and in patients who ultimately require large-volume transfusion. These studies therefore evaluate an early, limited-dose whole blood strategy rather than whole blood resuscitation throughout haemorrhage, limiting conclusions regarding potential dose-response effects.

The discrepancy between these randomised trials that found no evidence of benefit from whole blood, and numerous positive observational studies highlights the limitations of non-randomised evidence in clinical medicine. In observational studies, treatment allocation is heavily influenced by injury severity, transport time, clinician judgement, logistics, and blood product availability. Furthermore, patients must survive long enough to receive additional transfusions, introducing survivor and immortal time biases, while analyses conditioned on post-baseline variables, such as transfusion volume, may induce collider stratification bias. Together, these biases can substantially exaggerate treatment effects even when sophisticated statistical adjustments are performed.

The forthcoming TROOP trial is expected to provide important additional evidence. Unlike SWiFT and TOWAR, TROOP permits administration of up to eight units of LTOWB (commenced in hospital), thereby evaluating a substantially greater exposure to LTOWB. In addition, TROOP will provide an opportunity to better characterise the safety of higher cumulative LTOWB exposure. Although LTOWB, by definition, contains low levels of anti-A and anti-B antibodies, it is not antibody-free. Increasing cumulative exposure could theoretically increase the risk of complications, including low-grade haemolysis of recipient red blood cells or subsequently transfused ABO-specific red blood cells, complement activation, or other occult immunological effects that may not be apparent using short-term clinical outcomes.

Despite these trials not demonstrating superiority of the prehospital administration of up to two units

of LTOWB over balanced component therapy, or equivalence between these approaches, the absence of any safety concerns may support the use of LTOWB in military settings where the logistic advantages of LTOWB result in it being the only blood product available in some settings. Results from TROOP will further inform the clinical efficacy and safety of higher-volume LTOWB resuscitation and should therefore greatly influence Defence transfusion policies and procedures.

Optimising Medical Officer training; strengthening the partnership between ADF and RACGP

Dr Andrew Ramage¹, Dr Rebecca Lock¹

¹ RACGP, Brisbane, Australia

Biography:

Dr Andrew Ramage is a GP working full time in civilian general practice having retired from military service as a Senior Medical Officer in 2024. He works with the Royal Australian College of General Practice as the QLD Senior Medical Educator for ADF Registrars as part of a team dedicated to ensuring ADF Registrars gain meaningful and relevant training while achieving Fellowship with RACGP.

The development of Medical Officers for the ADF relies heavily on a civilian training pathway for primary care to ensure a minimum standard of capability as the Medical Officer transitions from long term schooling and clinical secondments into the trained force. As the provider of primary care training for the majority of ADF Medical Officers, RACGP has established a strong working relationship with the ADF to ensure the training provided meets both the College standards and ADF requirements.

Historically, ADF registrars have been less successful in exams compared to their civilian cohort. Factors contributing to this include training interruptions, different clinical practice exposures and competing obligations. This has improved with PGY3 clinical development year being 12 months of uninterrupted civilian general practice, but a deficit remains.

RACGP has introduced ADF specific pre-exam support for both written and clinical exams with early results being very promising. RACGP launched an ADF exam support program for the written exam for 2026.1. ADF candidates enrolled in the exam were invited to participate in written exam preparation support. 32 candidates were invited. Participants had a success rate of 92% across written attempts, compared to 80% across all ADF candidates who sat

the exam. This was comparable to the cohort success rate of 82% for the written assessments.

RACGP will continue to monitor performance and introduce programs tailored for ADF registrars to enhance the rate of progression through Fellowship training. Ensuring prevocational career advice provided by ADF commanders, career managers and Senior Medical Officers aligns with information provided in the RACGP ADF handbook will further optimize ADF MO capability for the ADF. This will ensure ADF MOs in training are optimising their pathway to fellowship, in receiving the correct guidance during the final years of medical school and hospital rotations.

Shaping hospital rotations to ensure mandatory components for RACGP Fellowship training are met early in the internship/residency years, and allow more opportunities for exposure to rotations in Emergency Medicine in the second year of residency training. If used wisely, this will allow for completion of formal emergency training that can be consolidated with hospital secondments in the RACGP extended skills term and can contribute toward completion of a Rural Generalist Fellowship.

These prevocational activities require the support and mentoring of MOs from medical school through to Fellowship through both RACGP and ADF career management organisations and command elements. Further strengthening the partnership between RACGP and ADF to work together in the prevocational training environments will optimise the clinical training components required for ADF MOs in remote locations as well as establishing the pre-conditions for successful completion of the RACGP Fellowship training program. Once in vocational training, RACGP will continue to work with ADF to facilitate opportunities for registrars to succeed in training through additional education, training and mentorship above that provided to civilian registrars.

Oral Health Inequalities in the Australian Defence Force: A Retrospective Observational Study

LTCOL Anthony Craig¹

¹ Australian Army, Brisbane, Australia

Biography:

LTCOL Tony Craig commissioned into the Royal Australian Army Dental Corps in 2005 while completing dental studies at the University of Queensland. He holds a Bachelor of Physiotherapy, Bachelor of Dental Science with First Class Honours,

Master of Clinical Dentistry in Implant Dentistry, and is currently completing a Master of Dental Public Health.

Tony has served across a range of clinical, command, staff and technical appointments, including Senior Dental Officer roles, Officer Commanding 33 Dental Company, Staff Officer Grade 1 – Dental, Brigade Dental Officer Headquarters 2nd Health Brigade, and Head of Corps, Royal Australian Army Dental Corps. He was first appointed Head of Corps from 2021 to 2024 and was reappointed in 2026.

His military experience includes an exchange with the British Army on Exercise Long Look, and deployments as part of a Role 2 Hospital to Papua New Guinea on Exercise OLGETTA WARRIOR and to Bougainville on Operation RENDER SAFE, where he served as the sole dentist. He has also participated in Exercise SAUNDERS.

Tony's professional interests include improving dental readiness, reducing dental casualties in deployed environments, advancing dental technologies, and strengthening oral health promotion and service efficiency across garrison and deployed settings.

Background

Dental disease is a preventable cause of non-battle morbidity that can degrade individual readiness, consume deployed health resources, and adversely impact operational capability. The Australian Defence Force (ADF) uses the Dental Fitness Class (DFC) to provide commanders with an indication of the risk of a member becoming a dental casualty. While overseas military studies have reported poorer dental readiness among enlisted and lower-ranked personnel, comparable ADF-wide evidence has been limited.

Aim

To describe oral health characteristics, including dental deployability, among serving ADF personnel and examine whether deployability and broader oral health outcomes differ by Service, rank and demographic characteristics.

Methods

This retrospective observational study analysed routinely collected Defence eHealth System dental examination records for serving ADF personnel aged 18 years and older who underwent an initial or periodic dental examination between 1 July 2023 and 30 June 2025. Outcomes included Dental Fitness Class, ADF periodontal assessment, decayed, missing and filled teeth (DMFT), and Basic Erosive Wear Examination (BEWE). DFC was dichotomised as deployable (DFC 1–2) or non-deployable (DFC 3).

Multivariable logistic and multinomial regression models estimated adjusted odds ratios, relative risk ratios, 95% confidence intervals and p-values, adjusting for Service, rank, Service × rank interaction, Indigenous status, age category and sex.

Results

Of 61,418 personnel retained for the deployability analysis, 59,553 (97.0%) were dentally deployable and 1,865 (3.0%) were non-deployable. Although the non-deployable proportion was small, it represents a mission-relevant population requiring treatment before deployment. After adjustment, Army personnel had lower odds of deployable dental status than Navy personnel (OR 0.78, 95% CI 0.66–0.91, $p=0.002$) and Air Force personnel (OR 0.84, 95% CI 0.72–0.98, $p=0.030$). Officers had higher odds of deployability than enlisted personnel within Navy, Air Force and Army (ORs 1.87–2.48, all $p<0.001$). Indigenous personnel had lower odds of deployable dental status than non-Indigenous/not-stated personnel (OR 0.60, 95% CI 0.50–0.73, $p<0.001$).

Broader oral health indicators showed similar patterned inequality. Officers had lower odds of having periodontal pocketing across all Services, while Indigenous personnel had greater odds of periodontal pocketing (OR 0.67, 95% CI 0.60–0.76, $p<0.001$). Moderate-to-severe tooth wear (BEWE ≥ 9) increased strongly with age, with personnel aged 55 years and older having markedly higher odds than those aged under 25 years (OR 9.98, 95% CI 9.05–11.00, $p<0.001$). DMFT burden also increased substantially with age and was higher among Indigenous personnel for DMFT >20 compared with DMFT <5 (RRR 2.15, 95% CI 1.45–3.20, $p<0.001$).

Conclusion

Dental non-deployability in the ADF is uncommon but not randomly distributed. Army, enlisted and Indigenous personnel demonstrated lower dental deployability, and similar disparities were observed across periodontal status and cumulative caries experience. These findings mirror overseas military cohorts and indicate that dental readiness is not solely an individual clinical issue, but a force health protection and capability concern. Targeted prevention, risk-based recall, early intervention at training establishments and equity-focused access pathways may reduce dental casualties, improve deployment availability and better align dental resources with operational risk.

Partnering with the Veteran Community: Building a Research Ecosystem to Improve Lifelong Health Outcomes for Defence Members and Veterans

Professor Marina Kennerson Kennerson^{1,2,3},
Dr Joanneke Maitz^{1,2,3}, Leon Smith⁴, Kirsty Chapman⁴, Dr Patrick Arulanandam⁴

1 ANZAC Research Institute, Concord, Australia

2 Concord Repatriation General Hospital, Concord, Australia

3 Faculty of Medicine and Health University of Sydney, Sydney, Australia

4 National Centre for Veterans' Healthcare, Concord, Australia

Biography:

Dr Joanneke Maitz is Head of the Burns and Reconstructive Surgery Research Group at the ANZAC Research Institute, Concord Repatriation General Hospital, where she leads a multidisciplinary research program developing regenerative medicine, bioengineering, and innovative technologies to improve outcomes for patients with burns, complex wounds, and reconstructive injuries. Her translational research spans laboratory discovery through to clinical implementation, integrating biomaterials, tissue engineering, and novel therapeutic approaches to address unmet clinical needs. Dr Maitz also leads research into trauma and injury relevant to both military and civilian populations, supported by competitive funding from the Department of Defence. Through close collaboration with clinicians, scientists, engineers and industry partners, her program accelerates the translation of research into practical solutions that improve healing, restore function and enhance quality of life for people living with complex injuries.

The health needs of Defence personnel and veterans are complex, evolving and often extend across the lifespan. Addressing these challenges requires research that is clinically integrated, responsive to community priorities and capable of translating discoveries into meaningful improvements in care.

Established as a memorial to veterans and their families, the ANZAC Research Institute (ANZAC RI) has been embedded within Concord Repatriation General Hospital for more than 25 years, creating an environment where clinicians, scientists and health professionals work together to address real-world healthcare challenges. This model has fostered multidisciplinary expertise spanning

ageing, cardiovascular disease, neuroimmunology, neurogenetics, oncology, thrombosis, burns and reconstructive medicine, reproductive health and precision diagnostics.

As part of the Concord veteran health ecosystem, ANZAC RI is strengthening its partnership with the National Centre for Veterans' Healthcare, Defence organisations and the veteran community to ensure that research priorities are informed by lived experience and aligned with the emerging needs of current and former serving members. This collaborative approach provides opportunities to investigate service-related health conditions, comorbidities and healthy ageing, while identifying biomarkers, risk factors and new therapeutic strategies that support prevention, diagnosis, rehabilitation and long-term wellbeing.

Importantly, the Institute recognises that improving veteran health requires a holistic approach that extends beyond individual diseases to encompass physical, psychological and social determinants of health. By integrating clinical care, translational research and community partnerships, ANZAC RI aims to support better health outcomes for Defence members, veterans and their families while generating discoveries that benefit the broader Australian community.

This presentation highlights ANZAC RI's commitment to working alongside the veteran community to co-design and deliver research that addresses the questions that matter most, ensuring that the legacy of service continues to inspire innovation, collaboration and improved healthcare for future generations.

"Research with veterans, not just for veterans."

Polypharmacy, medication literacy and safety: Co-designing better support for Australian veterans

Dr Sanket Raut^{1,2}, Dr Rebecca Mellor^{1,3},
Dr Andrew Khoo^{1,4}

1 Gallipoli Medical Research, Greenslopes, Brisbane, Australia

2 School of Medicine, The University of Queensland, Herston, Australia

3 School of Health and Rehabilitation Sciences, The University of Queensland, St Lucia, Australia

4 Ramsay New Farm Clinic, New Farm, Australia

Biography:

Dr Sanket Raut is a research fellow at the Gallipoli Medical Research (GMR).

He has a background in Medicine (MBBS), Pharmacology (MD) and Neuroscience (PhD). His PhD research was on development of new drugs targeting trauma memories for treatment of PTSD.

Dr Raut works within the Healthy Veterans Research Program at GMR where his research is focused on quality use of medicines in veterans to improve pharmacological management of PTSD.

His current research explores patterns of psychotropic medication use in veterans with mental health conditions. He is the lead investigator of a multi-phase program examining health literacy, and digital health tools development to support informed decision-making in mental healthcare.

He is passionate about reducing preventable harm from polypharmacy, promoting evidence-based prescribing, and ensuring veterans receive coordinated care. Dr Raut has published in leading journals including (Nature) Translational Psychiatry, Journal of Psychiatric Research, Pharmacology and Therapeutics and presented his work at national and international conferences.

Introduction

Ex-serving Australian Defence Force (ADF) veterans experience high rates of chronic physical and mental health conditions, resulting in substantial medication use and increased risk of polypharmacy. Polypharmacy is associated with adverse drug events, medication interactions, hospitalisation, and reduced quality of life. While health literacy is a key determinant of safe medication use, little is known about medication literacy among Australian veterans. This study aimed to examine veterans' knowledge and practices regarding safe medication use, identify treatment preferences, and co-design

recommendations for a veteran-focused educational resource to improve medication safety and health outcomes.

Methods

A mixed-methods co-design study was conducted in two phases. Phase 1 comprised a national online survey of ex-serving ADF veterans aged over 18 years who regularly used two or more prescribed medications for physical and/or mental health conditions. The survey collected demographic information and assessed medication knowledge, safety practices, adherence behaviours, and treatment preferences. Phase 2 involved an online co-design workshop with veterans who completed the survey and volunteered to contribute to the development of an educational resource. Workshop discussions explored barriers and facilitators to medication management, treatment decision-making, and preferred resource formats.

Results

A total of 125 veterans completed the survey. Participants were predominantly male (84%), aged over 50 years (80%), married (74%), and evenly distributed across urban (49%) and rural (51%) locations. Most identified ethnically as Australian (71%), with 25% identifying as Anglo-European and 9% as Indigenous Australian. The majority had served in the Army (65%), and 30% had discharged within the previous decade.

Mental health conditions were common, reported by 71% of participants, with post-traumatic stress disorder (79%), anxiety (77%), and depression (66%) most frequently identified. All participants reported at least one chronic physical health condition, most commonly chronic pain (60%) and arthritis (56%). Polypharmacy was prevalent, with 44% taking six or more prescribed medications daily. Although most participants expressed confidence in managing their medications, gaps in medication literacy remained. Fifteen percent were not aware of potential medication side effects, 25% did not understand drug-drug interactions, and 30% had not discussed medication interactions with a healthcare provider. In addition, medication adherence challenges were common, including forgetting doses (56%) and discontinuing medications due to side effects (41%). Medication disposal practices varied, with only 40% regularly returning unused or expired medications to a pharmacy. Sixty-four percent expressed interest in further education regarding medication safety and treatment options.

Workshop participants confirmed that polypharmacy and poor health literacy are common challenges

within the veteran community and may be influenced by military culture. Participants emphasised the importance of supporting self-management, improving communication with healthcare providers, increasing awareness of medication impacts on employment and daily functioning, and promoting safe medication disposal. Recommendations included development of short, accessible educational modules featuring real veterans and clinicians, provision of information about medication interactions and non-pharmacological treatment options, and extension of medication literacy education to serving members preparing for transition from military service.

Conclusions

Ex-serving ADF veterans commonly experience multimorbidity and polypharmacy and demonstrate ongoing needs for medication literacy support despite generally high self-reported confidence in medication management. Co-design findings highlighted the importance of veteran-centred, practical, and accessible educational resources that promote informed decision-making, safe medication use, and engagement with healthcare providers. These findings will inform the development of a veteran-focused educational module that will support safer medication practices and improved health outcomes among Australian veterans.

Precision Psychiatry Approaches to Predicting Ketamine Treatment Outcomes in Veterans with PTSD and Treatment-Resistant Depression

Mr Charles Dodds^{1,2,3}, Dr Rachelle Dawson¹

1 Zed3 Medical Group, Bruce, Australia

2 Queensland Brain Institute, St Lucia, Australia

3 The University of Queensland, St Lucia, Australia

Biography:

Charles Dodds is a doctoral candidate at the Queensland Brain Institute, University of Queensland, and a research assistant at Zed3 Medical Group. His research centres on understanding individual variability in treatment outcomes for post-traumatic stress disorder and depression. Using machine learning techniques applied to clinical data, he identifies predictors of treatment response to inform more precise, personalised approaches to mental health care.

Dr Rachelle Dawson is a clinical psychologist and research associate at Zed3 Medical Group. As a psychologist, she works with adults, including

veterans, first responders and elite athletes. Rachelle has expertise working with trauma, including developmental trauma, PTSD, and moral injury. As a research associate, she is involved in research exploring how ketamine infusions with adjunctive psychotherapy work to reduce symptoms of PTSD and depression.

Veterans presenting with post-traumatic stress disorder (PTSD), treatment-resistant depression (TRD), and related psychiatric conditions demonstrate substantial heterogeneity across symptom presentation, trauma exposure, comorbidity, and treatment history. This heterogeneity often causes inconsistent treatment outcomes and can complicate clinical decision-making across pharmacological and psychological interventions.

Recent advances in novel psychiatric interventions, including ketamine infusion-assisted therapies, have expanded treatment options for veterans with complex mental health conditions. However, response to ketamine therapy remains highly variable, highlighting the need for precision psychiatry approaches capable of predicting treatment response outcomes and aiding treatment planning.

This study presents outcomes of latent class growth analysis (LCGA) and predictive modelling techniques to longitudinal clinical data collected from veterans undergoing ketamine infusion therapy with adjunctive psychotherapy. Models incorporate demographic, psychometric, diagnostic, and biological variables to identify clinically meaningful response trajectories and predictors of therapeutic outcome. Primary outcome measures include changes in PTSD symptom severity measured by the PCL-5, and symptoms of depression, anxiety and stress measured by the DASS-21/42. Model stability and generalisability will be evaluated using bootstrap resampling and prospective dataset validation approaches.

Preliminary findings suggest that trajectory-based modelling may identify distinct responder profiles and clinically relevant predictors associated with ketamine treatment outcomes. These approaches may support the development of data-driven clinical decision support tools to enhance personalised treatment planning, optimise resource allocation, and improve mental health outcomes for veteran populations.

Preparing for the Worst: Palliation in the Field and Moral Injury Mitigation

DR / LTCOL Sandeep Bhagat, Dr Melanie Van Twest¹

¹ Headquarters 4th Brigade, Australian Army, Melbourne, Australia

Biography:

LTCOL Bhagat is a fellow of the RACGP, AChPM (RACP) and associate fellow of the RACMA. He is the current Head of Unit-Palliative Care and Director Medical Services at Bayside Health, Frankston (VIC). LTCOL Bhagat is a board member of Palliative Care Victoria since 2018. LTCOL Bhagat was commissioned in Jun 2010 as a ML3 SERCAT 5 Medical Officer. LTCOL Bhagat has served overseas on multiple operational deployments. He is posted to 4th Brigade as the Senior Medical Officer.

MAJ Van Twest is a long-serving member of the Army Reserve, having first joined as a soldier and becoming a Warrant Officer Clerk Two in administration before being commissioned as a medical officer. She is a Fellow of the Australian College of Rural and Remote Medicine with skills in primary care, emergency medicine and anaesthetics. MAJ Van Twest wintered on Macquarie Island in support of the Australian Antarctic Program and has a special interest in healthcare in austere environments. She currently works as a Rural Generalist Anaesthetist in regional Victoria and is posted to Headquarters 4th Brigade in Melbourne.

The post-World War Two world order is rapidly changing and with it the nature of future conflict. Experiences from the war in Ukraine show us that after many decades of access to air and technical superiority, with rapid aero-medical evacuation and high casualty survival rates, it is very likely that the next war to which the Australian Defence Force is committed will be a near-peer conflict dominated by drone technology that will greatly restrict air and surface transport of all kinds.

In such situations the ability to extract and treat critically wounded personnel in a timely way will be heavily compromised, leading to increased mortality in the field and echoing the experiences of major 20th Century conflicts. In this context it will become necessary to have options for providing humane and dignified end-of-life care for those with non-survivable wounds or where evacuation of critically injured personnel is prevented by the operational constraints and resource mismatching. Such

measures will require structured training of military members providing care at all levels to prepare them both clinically and mentally for the decisions they may have to make and the outcomes they may have to witness.

This presentation will discuss a proposed process for palliation of critically wounded personnel in the field in such unavoidable circumstances, including pre-prepared clinical equipment and drugs that would be used in accordance with strict protocols in order to avoid the decision burden morally, ethically and professionally. It will also examine the moral injury and emotional trauma that may arise for those providing care in such a situation, and discuss how we can potentially train to prepare for and mitigate that psychological damage in the hope of reducing its long-term effects, benefitting those members and preserving capability.

Prevention as Force Protection: The Strategic Cost of Failing to Protect the Health and Wellbeing of the Defence Workforce

Dr Andrew Mathieson¹

¹ Australian National University, Canberra, Australia

Biography:

Dr Andrew Mathieson is a Senior Lecturer in Health Science at the Australian National University (ANU), specialising in health systems, public health, environmental health, disaster risk reduction, and workforce capability. With more than 40 years of professional experience across academic, operational, and international settings, he brings a unique interdisciplinary perspective linking prevention, force protection, and organisational resilience.

Andrew has worked extensively across Australia, the Pacific, Africa, the Middle East, and Asia, supporting governments, defence personnel, NGOs, and communities in areas including public health preparedness, environmental health systems, risk communication, emergency management, and health workforce development. His international work has included projects and training activities in Iraq, Afghanistan, Lebanon, Kenya, Malawi, Tanzania, Fiji, Papua New Guinea, Timor-Leste, Pakistan, and Vanuatu.

Alongside his academic career, Andrew served for more than three decades in the UK Reserve Army, undertaking operational deployments and training missions in complex and high-risk environments. This

dual military and academic background has shaped his strong interest in prevention, preparedness, and protecting workforce capability in demanding operational settings.

Andrew is also actively involved in international environmental health leadership, professional education, and global workforce development initiatives through the International Federation of Environmental Health and related professional networks.

Modern defence capability depends not only on advanced platforms and operational readiness, but on the long-term health, resilience, and sustainability of the workforce. Yet prevention in military and veteran health is frequently under-prioritised compared with reactive treatment models. This presentation argues that failure to invest in prevention represents a strategic, operational, and fiscal vulnerability for defence organisations.

Drawing on examples from occupational health, environmental health, mental health, force protection, and public health systems, the presentation explores how preventable harms accumulate across the defence lifecycle. Poor prevention contributes to avoidable injury and illness, rising compensation liabilities, workforce attrition, reduced deployability, and diminished operational effectiveness. These impacts extend beyond serving personnel, affecting families, veteran outcomes, recruitment pipelines, institutional trust, and long-term retention.

The presentation reframes prevention as a capability and readiness issue rather than solely a health issue. It examines how early intervention, risk reduction, health intelligence, and evidence-based workforce protection strategies can strengthen force effectiveness while reducing downstream fiscal pressures. Particular attention will be given to the hidden costs of delayed action, including chronic disease burden, psychological injury, environmental exposures, burnout, and workforce disengagement.

The session will also explore the importance of integrated prevention systems that connect leadership, workplace culture, environmental health, training, and organisational stewardship. In an era of increasing strategic uncertainty and workforce pressures, prevention must be viewed as a core component of defence resilience and national security.

Ultimately, the presentation argues that failing to prevent today creates operational weakness and unsustainable costs tomorrow. Prevention is not an optional add-on to capability — it is fundamental to protecting people, sustaining readiness, and preserving the future defence workforce.

Project TrainWell: From Fragmentation to Resilience – Mapping Mental Health and Wellbeing Training to Strengthen Workforce Capability in Defence

Dr Joima Pariani¹, GPCAPT Joleen Darby¹

1 Department Of Defence, Australia

Biography:

Group Captain Joleen Darby is a Royal Australian Air Force medical officer, General Practitioner, and senior leader in Defence mental health. As Director, Mental Health and Wellbeing Initiatives, she leads enterprise strategy and implementation across mental health, suicide prevention, and alcohol and other drugs. She has held key leadership roles including Director in the Office of the Deputy Surgeon General, Chief of Aeromedical Evacuations, and Commanding Officer of the Institute of Aviation Medicine. A recognised Senior Aviation Medical Officer, she brings deep expertise in aviation, occupational, and operational medicine, underpinned by extensive frontline and command experience. She was awarded the Conspicuous Service Cross for exceptional leadership and clinical care following the 2009 Ashmore Reef disaster. She champions innovation in health systems, contributing to health informatics, Responsible AI, and digital transformation initiatives.

Dr Joima Pariani is Assistant Director, Mental Health and Wellbeing Initiatives, leading Project TrainWell. She previously led key aspects of Defence's collaboration with the Australian Human Rights Commission, contributing to cultural reform. She holds a PhD from Victoria University focused on belonging and engagement. Her work promotes inclusion, wellbeing, and community connection, recognised in the 2024 VU Leadership Awards and the 2025 Women of Colour in STEM Emerging Leaders.

Mental health and wellbeing training is a critical enabler of workforce readiness and psychological resilience in military environments. However, within large and complex organisations, training systems often evolve organically in response to emerging demands rather than through deliberate enterprise design. While this enables responsiveness at a local level, it can also result in fragmented delivery, inconsistent governance, and limited visibility of how training activities align across the workforce.

As mental health and wellbeing training continues to expand across Defence, there is increasing complexity in how training is developed, delivered, and experienced. Training with similar intent

may exist across different organisational areas, with varying alignment in content, delivery, and governance. In the absence of a consolidated enterprise view, it becomes difficult to understand how training interacts across the workforce lifecycle, whether it is proportionate to risk and role, and how effectively it supports capability outcomes. This creates a system-level gap, limiting the ability to ensure training is aligned, proportionate, and effective in supporting workforce capability.

Project TrainWell was established within the Mental Health and Wellbeing Branch to address this gap. The project responds to the need for a structured, Defence wide understanding of mental health and wellbeing training as an integrated system, rather than a collection of individual initiatives. Its aim is to develop an enterprise level Training Needs Analysis to inform a coherent, risk informed training continuum aligned to workforce requirements, operational context, and career progression.

The project adopts a structured, requirements led approach, beginning with comprehensive mapping of the current training landscape. This includes all mental health and wellbeing related training delivered across Defence, spanning centrally governed programs as well as those developed or delivered across Groups, Services, and other functional areas. The intent is not to assess programs in isolation, but to understand how they collectively contribute to workforce capability.

Methods combine documentary analysis, training inventory data, and targeted stakeholder engagement with training owners, subject matter experts, and delivery stakeholders. Information is captured across four domains, such as training content and intent, delivery ownership, target cohorts across the workforce lifecycle, and governance arrangements. This approach enables both descriptive mapping of the training environment and qualitative insight into how training is operationalised in practice.

Preliminary findings indicate a training landscape that is extensive but highly distributed. Multiple initiatives address common themes such as psychological resilience, mental health awareness, leadership responsibilities, and peer support. However, these programs are often developed independently, resulting in variation in emphasis, delivery modality, and oversight. This fragmentation limits our ability to ensure training is effective, proportionate, and aligned to workforce need.

A key emerging gap is the absence of an enterprise framework linking training to defined workforce needs, risk profiles, and career stages. This contributes to duplication in some areas, while

creating potential gaps in others, particularly where ownership or accountability is unclear. Variability in messaging also presents a risk of inconsistent interpretation of mental health and wellbeing principles across the organisation.

Stakeholder engagement further highlights that while individual training initiatives are often well designed and contextually appropriate, there is limited visibility of how these components interact as a system. Opportunities for alignment, sequencing, and rationalisation are therefore not consistently realised.

Project TrainWell applies an enterprise systems approach to mapping mental health and wellbeing training, generating early insights into the challenges of managing distributed training environments at scale. It highlights how strengthening visibility, governance, and alignment can support more coherent and effective training systems, with broader relevance across Defence, the Australian Public Service, and other large organisations seeking to integrate fragmented training landscapes.

Psychological Preparedness as a Military Capability: An Integrated Approach to 21st Century Psychological Challenges

Dr Kylie Tuppin¹, Dr Maureen Montalban¹

1 Defence, Canberra, Australia

Biography:

Kylie Tuppin is a clinical psychologist with a background in military psychology, working in mental health and occupational psychology roles and in capability management. She holds a PhD in Organisational Psychology, and Masters degrees in Clinical Psychology and War Psychiatry. She is the Managing Director of KT Psychology and Consulting, where she works with people managing a wide range of psychological concerns, and consults in psychological selection and personnel management, including leadership and high-performance development. She also holds a strong interest in individual and organisational wellbeing practices. Kylie has served for more than 25 years in the Australian Army as a psychology officer, and throughout her career has gained expertise in strategic personnel and health policy, recruitment and selection, clinical assessment and counselling, and service delivery management. She has deployed several times in support of military operations to war zones, peacekeeping and disaster responses.

Military systems have long recognised the importance of physical readiness, yet psychological preparedness remains less consistently defined, measured and embedded across force generation, deployment and recovery cycles. International military and grey literature increasingly describes psychological readiness as more than individual resilience: it includes anticipatory preparation, realistic stress exposure, leader capability, cohesive teams, family and social supports, ethical command climates, and organisational systems that identify and respond to cumulative strain. Published military psychology research similarly highlights the role of mental health literacy, unit cohesion, leadership, training realism, sleep and fatigue management, peer support, and post-deployment reintegration in sustaining operational performance and wellbeing. Psychological preparedness encompasses all of this and more, and has a significant effect on the mobilisation of people to support a military effect. However, the Australian Defence Force (ADF) has historically developed and applied psychological readiness, risk assessment and resilience measures in siloed, Service-specific ways. Without a Defence-wide framework, complex legal, ethical, operational and clinical considerations are not uniformly understood, and the capacity to be psychologically prepared is thus limited for both Defence, and the nation more generally.

This presentation explores the development of an ADF Psychological Preparedness Framework and how it might apply for both today and into the future. It will cover the following three areas:

1. The concepts of psychological preparedness as it is currently understood. This includes the development of a specific Psychological Preparedness definition, and contributions to psychological preparedness including the actions taken to plan, organise, train, and practice to build and sustain the psychological capabilities necessary to prevent, protect against, mitigate the effects of, respond to, and recover from psychological threats. It is mapped against some of the recognised issues currently facing the ADF as defined in the latest Defence Strategic Review. It also explores an argument for considering psychological preparedness beyond just the military, to include the nation as a whole.
2. A model for considering the concepts of preparedness. This includes the classic three preparedness questions of:
 - i. Readiness for what?
 - ii. For when?
 - iii. And of what?

These questions are then mapped against the ADF defined concept of psychological preparedness. Specifically considered are points such as assumptions, the metrics and analysis of preparedness, risks, trade-offs and recurring tensions in preparedness theory, and how this looks when applied to psychological preparedness. This consideration is stratified at several levels – individual, team, unit, Service.

3. The establishment and work of the Defence Health Expert Network in Psychological Preparedness, including the development of guiding principles for psychological preparedness, and how programs both within the ADF (such as BattleSMART) and external (such as iCover) contribute to psychological preparedness and integrate with other elements of military preparedness.

The presentation will argue that psychological preparedness should be treated as a core component of military readiness rather than a downstream health intervention. The central proposition is that psychologically prepared forces are not simply less likely to become unwell; they are more likely to adapt, decide, recover and perform effectively under conditions of uncertainty, threat and sustained demand.

Reconceptualising Mental Health Screening in Military Populations: The ADF Experience

Dr Maureen Montalban¹

1 Joint Health Command, Australia

Biography:

Colonel Maureen Montalban is a senior military psychologist and Director of Military Mental Health and Psychology within Joint Health Command, Australian Defence Force. With over two decades of service since 2004, she provides strategic leadership and expert advice to Defence senior leaders on mental health policy, resilience, operational readiness, and psychological support across the ADF.

Colonel Montalban also serves as Head of Corps for the Australian Army Psychology Corps, advising Army senior leaders on the Australian Army Psychology Corps capability, undertakes workforce advocacy, maintains Corps history and sustains esprit de corps. Her career spans tactical, operational, and strategic roles, including deployments to Timor-Leste, the Solomon Islands, and the Middle East as part of Psychology Support Teams.

She holds a PhD from the Australian National University, alongside qualifications in public health and health psychology. Her research interests and expertise lies in military psychology, military sociology and gender culture.

Background

Mental health screening has been a longstanding component of military health systems, including within the Australian Defence Force (ADF), where it has been implemented since 1989 to identify personnel at risk of mental health concerns and facilitate early intervention, education, and support. The ADF Mental Health Screening Framework (MHSF) extends beyond traditional screening definitions by utilising a comprehensive, multi-faceted mental health screening continuum (a screening-plus model) that extends beyond symptom detection to include psychoeducation, clinician interviews, and structured follow-up.

Aim

This paper uses the ADF MHSF as a case study to critically examine the role and effectiveness of mental health screening in a military population. Drawing on contemporary literature and Defence policy, it aims to explore the extent to which population-level screening contributes to early identification, engagement, and intervention, while considering known limitations such as variable tool validity, under-reporting, and uncertain long-term outcomes.

Method

This study draws on a narrative review of contemporary peer-reviewed literature on mental health screening in military and high-risk occupational populations, alongside analysis of Defence policy and practice as outlined in the ADF MHSF. The MHSF is examined as a case study of a comprehensive, multi-point screening model incorporating psychometric tools, psychoeducation, and clinician-led interviews across the service lifecycle. Evidence regarding screening validity, treatment uptake, and outcomes is synthesised to critically evaluate the effectiveness, limitations, and broader functions of mental health screening within this integrated framework

Results

The contemporary evidence base presents a paradox. Systematic reviews and military studies consistently indicate limited efficacy of population-level mental health screening in improving clinical outcomes, treatment uptake, or prevalence of mental disorders. Screening tools demonstrate variable psychometric reliability, high rates of false positives, and low treatment initiation following identification.

Furthermore, organisational screening contexts may contribute to under-reporting due to stigma, career concerns, and perceived lack of confidentiality—factors exacerbated in hierarchical military environments. These findings have influenced allied nations differently: for example, the United Kingdom has discontinued routine screening following evidence of ineffectiveness, while the United States, Canada and New Zealand maintain structured programs with varying degrees of integration and follow-up.

In contrast, the ADF MHSF illustrates a more comprehensive model of screening that integrates questionnaires with psychoeducation, clinician interviews, and follow-up, potentially enhancing engagement and contextual understanding of risk. While the effectiveness of this multi-faceted approach on mental health outcomes remains unclear, it highlights the broader functional role of screening beyond detection alone.

Conclusion

The ADF MHSF demonstrates a broader, systems-based approach that extends beyond symptom detection to include engagement, psychoeducation, and early intervention. While the impact of this multi-faceted model on long-term mental health outcomes remains unclear, it offers a pragmatic framework for addressing known limitations of traditional screening. Ongoing evaluation is required to determine its effectiveness, cost-efficiency, and potential unintended consequences, and to inform the future design of mental health strategies in military and other high-risk occupational settings.

The opinions expressed in this publication are that of the authors/presenters, and not of the Department of Defence.

Remote Mountain Medicine: Lessons from the Himalayas for Military Care

Dr Rebecca Carpenter¹

1 RAAF, Australia

Biography:

SQNLDR Rebecca Carpenter is a RAAF Medical Officer (MO) currently posted to 3 Aeromedical Evacuation Squadron (3AES) at RAAF Base Amberley. She joined the RAAF in 2003 initially as an Air Defence Officer (now Air Battle Manager) before undertaking medical school via the Graduate Medical Scheme graduating in 2015. As an MO, she has had postings to the

Institute of Aviation Medicine, 1 Expeditionary Health Squadron and the Aeromedical Evacuation Control Centre at Headquarters Joint Operations Command prior to posting to 3AES at the beginning of this year. She has deployed on OPs SLIPPER, ACCORDION, ARGOS, SURPAT and the Afghanistan Non-combatant Evacuation.

Background

From March to May 2026, I volunteered as a doctor with the Himalayan Rescue Association (HRA) at a remote medical clinic in Pheriche, in the Khumbu Valley, Nepal. The HRA is a not-for-profit, non-government Nepali organisation founded in 1973. Its mission is to reduce casualties in the Nepali Himalayas through provision of altitude safety education and medical care to trekkers, climbers and Nepali workers.

Located along the Everest Base Camp trekking route at 4260m elevation, the clinic is accessible only by foot, horse or helicopter. It is staffed by three volunteer doctors and three non-clinical staff during the climbing and trekking seasons.

The clinic is austere; equipped with basic bedside diagnostic equipment as well as portable ultrasound and xray devices. There is no pathology capability. There is capacity for four inpatients, with supplemental oxygen provided via solar-powered oxygen concentrators. Intravenous therapies can be provided, however there are no infusion devices, and whilst laryngoscopes and endotracheal tubes are available, there is no ventilator. Foot-powered Gamow bags provide limited redundancy for treatment of severe acute mountain sickness (AMS) in case of no solar power. The pharmacy is relatively well stocked with a variety of emergency and primary health care medications.

Environmental conditions are harsh with average daily temperatures between -15°C to +4°C during spring. The clinic is minimally insulated meaning equipment, medications and consumables are routinely exposed to below freezing temperatures potentially compromising efficacy.

Patient demographics and clinical presentations

Between March and May, there were 420 presentations to the clinic, approximately 80% of which were Nepali. Ages ranged between 15 months to 81 years. Tourists, making up the remainder of presentations, were from countries including India, China, Japan, Malaysia, Australia and NZ among others. Language barriers were challenging; compounded by limited wifi for translation.

AMS, High Altitude Pulmonary Oedema (HAPE) and High Altitude Cerebral Oedema (HACE), were

the predominant presentations to the clinic. HAPE and HACE patients were admitted on average two nights per week. Primary care conditions such as pneumonia, upper respiratory tract illnesses and gastroenteritis were also common.

Patient evacuation

Nepal does not have a national aeromedical evacuation service and weather in the Himalayas is highly variable. Consequently, evacuation of unwell patients is challenging. Patients with minor ailments either wait their illness out or are transported down the valley via horse over several days. Critically unwell patients are opportunistically evacuated via private commercial helicopters with no in-flight medical care. This results in strained clinical resources due to prolonged patient holding as well as increased risk to patients.

Military parallels

Experiences in Pheriche demonstrate strong parallels with military medicine, with the clinic functioning in a manner comparable to a Role 1 facility. Clinical decision-making in resource-limited and austere environments is critical, particularly regarding early patient disposition, evacuation requirements and ceilings of care due to constrained resources and evacuation challenges. The need for prolonged management of unwell patients and for clinicians to operate at the top of their scope is similarly characteristic of military contexts, alongside harsh environmental conditions, complex resupply chains, limited reach-back support and restricted communications. Additionally the multi-national clinic team, with varying training backgrounds and clinical protocols, reflects the complexities of coalition operations. Prior military training and experience proved highly relevant in navigating these challenges whilst also reinforcing transferable lessons applicable to the military's austere training and deployment environments.

Staying the Course: Demands, Resources, and Career Intentions in the Navy

Dr Monique Crane¹, Dr Eyal Karin¹

¹ Macquarie University, North Ryde, Australia

Biography:

Monique Crane is a Professor of Psychology at Macquarie University, with a focus on resilience, stress adaptation, and mental health in high-pressure environments, particularly within the Australian Defence Force (ADF). She leads the Resilience

Research and Training Systems team and serves as Director of the Performance and Expertise Research Centre, where her work centres on strengthening individual and organisational capability in demanding operational contexts.

Prof. Crane's research is closely aligned with ADF priorities, examining how personnel can sustain performance, adapt to stress, and maintain wellbeing across the service lifecycle. She has led and contributed to projects focused on prevention, early intervention, and performance enhancement for military populations, with an emphasis on scalable, evidence-based solutions.

Prior to her academic career, Prof. Crane worked within the Australian Department of Defence as a project manager in strategic and operational mental health, providing her with deep insight into Defence systems, culture, and workforce needs. This experience continues to inform her collaborative approach with Defence stakeholders.

In addition to her research, Prof. Crane is committed to teaching and translating evidence into practice, developing programs that support resilience, leadership, and performance across Defence and other high-reliability organisations.

Career sustainability is a priority for the navy, as personnel growth is essential for operational readiness and for responding to competition for navy personnel's specialized skills. Among military personnel, mental ill-health influences career attitudes. Consequently, career sustainability depends on how effectively workplace demands that contribute to mental health challenges are managed and resourced. This research examined the demands contributing to navy personnel's intention to leave and willingness to re-deploy, with the individual characteristics and job resources that may moderate these effects. A longitudinal design was applied across the deployment of five navy ships. Deployment was selected as a pivotal career point, potentially affecting career attitudes. One-hundred and thirteen Australian navy personnel responded at three time-points: pre-deployment, mid-deployment, and post-deployment. A series of linear regression analyses were compiled to summarize the main effects of demands and the moderating role of resources and individual characteristics on: (i) intention to leave and (ii) willingness to re-deploy. Interpersonal demands during deployment significantly reduced willingness to re-deploy, while job ambiguity was associated with increased intention to leave the navy. No resources or individual characteristics moderated the effects of interpersonal demands. For other demands, job-based resources, such as job clarity, social support, and belonging, played a moderating role. Individual

characteristics, particularly deployment appraisal, autonomous motivation, and sleep quality, also moderated the effects of demands. This synthesis of evidence provides actionable targets for navy retention initiatives and suggests that addressing both organizational and individual factors may help sustain navy personnel in demanding operational contexts.

Suicide prevention and intervention within Defence: Increasing safety, enhancing protective factors and optimising workforce capability through the Defence SafeSide Project's system-wide approach – where are we three years on?

Ms Jennifer Harvey¹, Mr Dean Quirke¹,
Professor Anthony (Tony) Pisani², Mr Dan Mobbs³, Dr Sarah Donovan²

1 Mental Health And Wellbeing Branch, Dept of Defence, Australia

2 SafeSide Prevention, United States

3 SafeSide Prevention, Australia

Biography:

Jennifer Harvey is the Assistant Director of Suicide Prevention Initiatives within the Mental Health and Wellbeing Branch, Defence, and an experienced psychologist with a diverse background spanning clinical practice and mental health education. Across a 30-year career, she has worked in child protection, rehabilitation, corrections, and disability services, contributing to improved mental health outcomes in complex settings.

For the past 14 years, Jennifer has worked within Defence, where she is dedicated to supporting personnel to optimise their mental health and wellbeing. Her work has included direct clinical support, as well as the development and delivery of early intervention strategies, including awareness and skills-based training programs. She has also contributed to clinical workforce development, with a particular focus on risk assessment and critical incident response.

Jennifer is the Defence SafeSide project lead, overseeing the creation, customisation, and implementation of suicide prevention training across the Defence enterprise.

Dean Quirke brings more than three decades of experience across military service, corrections, government, community development, behavioural

change and suicide prevention. A former British Army Royal Engineer, Dean went on to work within the UK prison system before building a career focused on strengthening wellbeing, relationships and social connection. He has spent more than a decade designing and facilitating programs that support men and young people and is a published co-author in the field of domestic and family violence.

Dean now serves as Coordinator, Suicide Prevention Initiatives within the Mental Health and Wellbeing Branch, Department of Defence. In this role, he supports the implementation of the Defence SafeSide Project and other suicide prevention initiatives across Defence. His work combines operational experience, behavioural insights and prevention-focused approaches to strengthen workforce capability and support earlier intervention.

Across remarkably different settings, Dean's work has been shaped by a consistent question: how do we translate what we know about human behaviour, vulnerability and connection into practical approaches that help people feel safer, seek support and support one another?

Defence is strengthening suicide prevention across the Enterprise through a system-wide, prevention-focused approach that builds workforce capability, resilience, and shared responsibility for safety.

Recognising that suicide prevention extends beyond clinical care, this initiative equips personnel across disciplines to identify distress early, respond effectively, and support recovery.

In partnership with SafeSide Prevention, Defence has implemented a unified model that embeds the SafeSide Framework for Suicide Prevention and the CARE (Connect, Assess, Respond, Extend) model across both health and non-health settings. This approach has been co-designed with people with lived experience, ensuring it is practical, culturally aligned, and grounded in real-world needs. It enabled a shift from risk prediction and stratification to proactive, member-centred prevention-oriented practices.

A key strength of this approach is its multidisciplinary reach, supporting interoperability between clinical and non-clinical workforces, including mental health clinicians, medical officers, health practitioners, leadership, chaplaincy, and wellbeing support personnel. This whole of enterprise approach encompassed changes to policy, clinical practices and workforce education to create shared understanding and a common language.

This presentation will provide an update of the Defence Suicide Prevention Program and it relates

to training and insights into the program, now three years since commencement. Sharing key reflections and the evolution to tailored rank and role-based training.

Defence customised in-person training has been tailored for specific ranks and roles ensuring relevance and applicability across operational environments:

- CARE-RF & DRF for mental health clinicians and medical officers, supporting structured, prevention-focused decision-making, including consideration of foreseeable changes and practical safety planning.
- CARE-S for non-mental health practitioners, chaplaincy, and wellbeing staff, equipping them to recognise early signs of distress, initiate compassionate conversations, and facilitate appropriate support, including warm handovers to clinical care.
- CARE-C(A): Advanced skills for command personnel and managers as they support members at risk of suicide, self-harm or harm-to-others. Creating and fostering a positive workplace culture and enhancing unit and individual protective factors as essential components of suicide prevention.
- CARE-C: Skills for early career leaders and managers as they support members at risk of suicide, self-harm or harm-to-others. Fostering a positive workplace culture and building protective factors are promoted as essential components of suicide prevention.

Preliminary evaluation data indicates improvements in workforce confidence, practical application of skills, and attitudes toward shared responsibility in suicide prevention. Early findings also suggest stronger integration between clinical and non-clinical supports, contributing to earlier intervention and more coordinated care.

This initiative represents a significant cultural shift, reinforcing that suicide prevention is a collective responsibility and a core component of workforce resilience and operational readiness. Defence is among the first military organisation to implement this level of system-wide, prevention-oriented reform at scale.

This presentation will share early outcomes, implementation insights, and lessons learned, offering a practical and transferable model for other military and civilian health systems seeking to strengthen suicide prevention capability across diverse workforces.

The association of multi-system conditions on mental health trajectories during naval deployment

Dr Monique Crane¹, Dr Eyal Karin¹

¹ Macquarie University, North Ryde, Australia

Biography:

Monique Crane is a Professor of Psychology at Macquarie University, with a focus on resilience, stress adaptation, and mental health in high-pressure environments, particularly within the Australian Defence Force (ADF). She leads the Resilience Research and Training Systems team and serves as Director of the Performance and Expertise Research Centre, where her work centres on strengthening individual and organisational capability in demanding operational contexts.

Prof. Crane's research is closely aligned with ADF priorities, examining how personnel can sustain performance, adapt to stress, and maintain wellbeing across the service lifecycle. She has led and contributed to projects focused on prevention, early intervention, and performance enhancement for military populations, with an emphasis on scalable, evidence-based solutions.

Prior to her academic career, Prof. Crane worked within the Australian Department of Defence as a project manager in strategic and operational mental health, providing her with deep insight into Defence systems, culture, and workforce needs. This experience continues to inform her collaborative approach with Defence stakeholders.

In addition to her research, Prof. Crane is committed to teaching and translating evidence into practice, developing programs that support resilience, leadership, and performance across Defence and other high-reliability organisations.

This study seeks to enhance understanding of mental health trajectories across Navy deployments and the predictors of those trajectories by exploring a range of job design and individual-level factors. Personnel from the Royal Australian Navy were surveyed on pre-deployment, mid-deployment, and post-deployment. At pre-deployment, there were 559 (Mage = 30.19; male = 75.5%) survey responses, N = 112 survey responses could be linked at all time points (retention rate of 20.04% across all time points), and 314 personnel (56.2%) responded at least twice. Latent class growth analyses and growth mixture models were used to determine the trajectories that best fit the data. Separate models were developed

for each of the mental health outcomes studied (i.e. psychological distress, perceived resilience, and perceived stress), plus a latent outcome representing a summary measure of psychological ill-health. This latent outcome, estimated as the most comprehensive assessment approach, was used to evaluate all 33 predictors. Consistent with previous work, we identified between two and four trajectories reflecting resilient/low symptom trajectories and heterogeneous symptom trajectories. There were a greater proportion of personnel in the heterogeneous symptom trajectories than identified in previous research. A key contribution of this work is the thorough comparison and ranking of factors that influence the deployment experience. We emphasize the importance of role demands and resources in determining these trajectories when compared directly to self-regulation strategies. Study findings highlight important implications for job design for military personnel during deployment and underscore the importance of adopting a holistic system approach to well-being.

The Brain as the Human Weapon System: A Contemporary International Perspective on Blast Exposure, Brain Health and Military Readiness

Mr Paul Scanlan¹

¹ Vigil Australia, WEST LEEDERVILLE, Australia

Biography:

Paul Scanlan is a former Lieutenant Colonel, Australian Army Special Forces, and founder of Vigil Australia - a self-funded social impact organisation focused on blast overpressure and military brain health.

He served operationally across East Timor, Asia, Iraq, and Afghanistan, and domestically on Counter-Terrorism and COVID operations. He commanded from Lieutenant to Lieutenant Colonel, earning the Distinguished Service Medal for leadership in action.

From 2017-2019, he served at Diggerworks, including twelve months as Director, leading the blast overpressure research workstream and representing Australia at NATO and USSOCOM.

He has maintained collaboration since 2018 with the US DoD Warfighter Brain Health Initiative and a global Community of Learners across FVEY and NATO.

He is a member of NATO STO HFM-441 and an observer on the ADF/DVA Expert Advisory Panel on Brain Injury.

His 2026 international program includes the UK National Veteran Brain Health Symposium (presenting alongside UK MoD and US DoD representatives), Imperial College London Blast and Injury Conference (presenting), CIMVHR Blast Exposure Workshop (co-host), Military Health System Research Symposium (accepted poster) and US Department of War Warfighter Brain Health Blast Overpressure Summit, Joint Base Andrews (invited Australian FVEY/NATO panel member).

Background

Blast overpressure (BOP) exposure and its long-term consequences for brain health have moved from contested hypothesis to formally recognised operational risk across allied nations. The evidence base for cumulative sub-concussive exposure - repeated blast events below the threshold of acute clinical injury - has matured significantly since Australian Special Forces exposure data from the SOF Bridges study was first presented in 2025. The global conversation has shifted: the question is no longer whether the risk exists, but how fast allied nations can operationalise their response. For Australian military medicine, understanding that trajectory - and Australia's position within it - is now the critical task.

The 2026 International Engagement Program

This presentation draws directly on a concentrated 2026 international engagement program spanning six months and four allied nations. The program includes presenting at the UK National Veteran Brain Health Symposium alongside UK MoD and US DoD representatives - including the Director of the US Warfighter Brain Health Initiative; participating in NATO STO HFM-441 sessions; presenting at the Imperial College London Blast and Injury Conference; co-hosting the Canadian Institute for Military and Veteran Health Research Blast Exposure Workshop on closing gaps in exposure measurement, diagnostics, longitudinal monitoring, and family impact across allied nations; presenting at the Military Health System Research Symposium, Kissimmee FL (accepted poster, Session: Sustaining Brain Health Readiness against Emerging Threats in the Operational Environment); and serving as the invited Australian FVEY/NATO panel member at the US Department of War Warfighter Brain Health Blast Overpressure Summit at Joint Base Andrews. Together, these engagements provide a uniquely contemporary view of where allied nations are, what is working, and what remains unresolved.

Key Developments

On 6 May 2026 the US Secretary of War issued a formal directive declaring warfighter cognitive performance a core occupational readiness competency - naming brain health as a lethality issue and mandating a coordinated action plan within 60 days. NATO STO HFM-338 has pre-released its Technical Report, the most significant allied consensus document on mitigating military occupational brain health risks from repetitive blast exposure; successor working group HFM-441 is now active, addressing evidence gaps including indoor range and small-arms cumulative exposure. Emerging research, including Dutch RIVM work on cumulative low-level exposure from smaller weapons in high-frequency training contexts, is extending the evidence base into populations and environments not captured in HFM-338's primary datasets. Five Eyes partner nations are operationalising exposure governance frameworks, clinical pathways, and readiness monitoring - moving from research to implementation at pace.

Australian Context

Australia has Royal Commission Recommendation 61, a joint Defence-DVA Expert Advisory Panel, and a Senate inquiry committed for 2026. Against the backdrop of allied action - a 60-day US directive, a NATO technical report, and active Five Eyes implementation — the pace of Australian response raises direct questions for military medicine. Are our exposure thresholds calibrated to emerging allied standards? Are clinical pathways connected to current international evidence? Is the architecture in place to connect the operational, clinical, research, and veteran-facing domains into a coherent national response?

Conclusion

The brain is the human weapon system. Protecting it is part of military effectiveness and a direct obligation to those who serve. This presentation synthesises the most current available international intelligence on blast exposure and brain health - from operator experience to research to policy - and applies it to the Australian context. It identifies where Australia aligns with allied best practice, where gaps remain, and what Australian military medicine can do to close them. The evidence base exists. The allied connections exist. The policy mandate exists. The question is whether the governance architecture will follow.

This presentation will be delivered in November 2026 at the conclusion of the full international engagement program described above, ensuring the most contemporary available global perspective at time of delivery.

The Microscopic Enemy: Why the ADF Needs an Interprofessional Tropical Medicine Course for Future Indo-Pacific Operations

Dr Jonathan Begley^{1,2,3}

¹ HQ 2 BDE, Sydney, Australia

² Royal Darwin Hospital, Darwin, Australia

³ Monash University, Melbourne, Australia

Biography:

Jonathan is an Australian Regular Army anaesthetist and intensive care physician, with clinical appointments at Royal Darwin Hospital. Jonathan joined the Army Reserve as a medical officer in 2011 and completed his anaesthesia specialty training in 2017. He completed a 12-month fellowship in prehospital and retrieval and worked as an anaesthetist in Wagga Wagga, rural New South Wales, before joining the Army Medical Specialist Program (MSP) in 2020 and completing training in intensive care medicine. He is also a grandfathered Graduate of the Chapter or Perioperative Medicine.

Jonathan is a recipient of the Sidney Sax medal as the top Master of Public Health graduate at James Cook University. He is a keen educator, has completed a Graduate Diploma in Adult Education, and has served as an anaesthesia supervisor of training. Jonathan is an Anaesthesia Top-10 paper author, recipient of the Felicity Hawker Medal, and is a member of the board of the Safe Airway Society. He is an editor of Anaesthesia Reports, and adjunct senior lecturer at Monash University.

Australia's future military operations may occur in an Indo-Pacific environment shaped by strategic competition, climate instability, humanitarian crises, and potential contested island operations. In this context, tropical disease is not a peripheral health issue; it is a force protection, readiness and operational effectiveness problem.

Military history repeatedly demonstrates that infectious disease can degrade combat power as decisively as enemy action. During the Second World War, malaria, dengue, scrub typhus and dysentery affected Allied operations across the Pacific and South-East Asia. Australian, British and American experiences showed that even highly trained forces could become combat ineffective when tropical disease prevention, diagnosis and treatment were inadequate. More recent ADF experience in Bougainville and Timor Leste has reinforced the same lesson: tropical disease prevention depends not only on policy and prophylaxis, but on

clinician knowledge, command advice, adherence, surveillance, and early recognition.

This presentation argues that there is a strong case for a dedicated tropical medicine course for medics, nurses and doctors. Such a course should be interprofessional, operationally focused and relevant from point of injury and Role 1 care through to deployed hospital and evacuation settings. Core content should include malaria, dengue, leptospirosis, scrub typhus, melioidosis, diarrhoeal disease, vector control, chemoprophylaxis, and outbreak recognition. The course should allow the translation of public health advice into practical command recommendations.

Comparable allied models exist. The United States offers several structured didactic and field-based courses for military health personnel and many civilian courses exist globally. An ADF course could be regionally and organisationally tailored, supported by the significant expertise within the Malaria and Infectious Disease Institute. It could be delivered through a blended approach: online pre-learning, simulation-based cases, laboratory exposure, field environmental health activities, and scenario-based command advice.

A dedicated ADF tropical medicine course would strengthen readiness for warfighting, peacekeeping, humanitarian assistance and disaster relief across the Indo-Pacific. It would also improve interoperability with regional partners and allies. In future Pacific operations, the enemy may not always be visible. Preparing clinicians to recognise, prevent and manage tropical disease is a practical investment in resilience, operational endurance and mission success.

The Sociotechnical Role of Funeral Professionals in United States Veteran Suicide Surveillance

Prof. Michael Rivera¹, Prof D. Alex Hughes¹, Justin Norman¹, Prof Kathryn Metcalf¹, Ella Montgomery¹, Leah Black², Anya Avendano², Emma Rosas², Prof. Gino Galvez², Prof. Erlyana Erlyana², Prof. Jeremy Ramirez²

¹ University Of California, Berkeley, United States,

² California State University, Long Beach, United States

Biography:

Dr. Jeremy Ramirez is an Assistant Professor in the Department of Health Care Management at California State University, Long Beach. His research focuses

on veteran health, suicide prevention, and health information systems.

Dr. Erlyana Erlyana is a Professor in the Department of Health Care Management at California State University, Long Beach. Her work focuses on health care access, underserved populations, health disparities, and social determinants of health care utilization.

Michael Rivera is an Assistant Professor of Practice in the School of Information at the University of California, Berkeley. His work focuses on sociotechnical systems in the fields of politics and healthcare.

Accurate identification and reporting of veteran deaths by suicide are essential for understanding the scope of veteran suicide and informing the allocation of preventative resources. However, determining a decedent's veteran status and confirming death by suicide is a complex sociotechnical process involving multiple organizations, data systems, and stakeholders. Mortuaries and funeral homes occupy a critical yet understudied position within this process, often serving as one of the first points at which veteran status is identified and communicated following a death.

This paper presents findings from focus groups conducted with mortuary and funeral home professionals across California. To date, two focus groups representing ten mortuaries and funeral homes have been completed. Findings illuminate current practices, barriers, and opportunities related to veteran identification and post-mortem information sharing.

By examining the experiences of funeral and mortuary professionals, this study contributes new insight into an often-overlooked component of veteran suicide surveillance infrastructure. Findings have implications for improving the accuracy of veteran mortality data and offer evidence-informed recommendations for policymakers, public health agencies, and veteran-serving organizations seeking to strengthen veteran suicide identification, reporting, and prevention efforts.

The Tide that does not Turn: Enduring Principles in Military Medicine

BRIG Louise Martin¹

¹ Australian Army, Paddington, Australia

Biography:

Brigadier Louise Martin, CSC, is Commander 2nd Health Brigade. A graduate of the Australian Defence Force Academy, the Royal Military College and the Australian Command and Staff College, she has served in a range of senior operational, strategic and command appointments across Army and Defence, including as Director Army Health, Director Logistics Plans, Joint Operations Command, and Chief of Staff, Joint Health Command. Brigadier Martin was awarded the Conspicuous Service Cross for outstanding achievement in command of the 2nd General Health Battalion.

The evolving geopolitical landscape, rapid technological advancement, and renewed focus on interoperability have prompted assertions that military medicine is undergoing fundamental transformation. Framed within the conference theme of "Shifting Tides of Military Medicine," such perspectives imply that contemporary practice represents a departure from the past. However, drawing on Clausewitz's enduring observation that the nature of war remains constant while its character changes, it can be argued that the foundations of military medicine are not being reshaped, but rather reaffirmed.

At its core, military medicine has always served a singular purpose: the preservation of fighting strength through minimising the impact of disease and the provision of care for the combat casualty. While modern doctrine emphasises prevention, resilience, and system integration, these are not new priorities but rather extensions of longstanding practice. Across conflicts, the defining task of deployed health systems remains unchanged—stabilising the wounded in austere conditions and returning them, where possible, to duty or onward care.

Despite advances in precision weapons, personal protection, and medical technology, the dominant patterns of injury—penetrating trauma, blast, burns, and psychological harm—persist with striking consistency. Accordingly, the clinical imperatives of care remain familiar: control haemorrhage, secure the airway, support circulation, and move the casualty through a timely continuum of care. Damage control resuscitation and surgery, often framed as modern innovations, instead represent the refinement of principles recognised across generations of conflict—prioritising time, physiology, and pragmatism over perfection.

Framing military medicine as fundamentally "shifting" risks obscuring this continuity and, in doing so, disconnecting contemporary practice from

its empirical foundations. Innovation is essential, but it is evolutionary, not revolutionary. The enduring challenge remains unchanged: delivering the right care, at the right time, in the harshest conditions, to prevent otherwise survivable deaths.

In an era preoccupied with change, the real strength of military medicine lies not in reinvention, but in disciplined adherence to principles that, despite changing tides, do not turn.

The Weaponisation of Digital Health

A/Prof Derrick Tin^{1,2}

1 University of Melbourne, Australia

2 Serco, ASPAC

Biography:

Dr Derrick Tin is an Associate Professor of Critical Care and a US fellowed Disaster Medicine Specialists. His research interests span across both natural, as well as man made disasters with a specific focus on the health impacts of intentional mass casualty events.

Background

Digital health technologies have transformed healthcare delivery through electronic medical records, telehealth, connected medical devices, artificial intelligence (AI), and remote monitoring systems. While these technologies improve efficiency and patient outcomes, they also expand the attack surface available to malicious actors. In modern conflict, healthcare systems are increasingly recognised as critical infrastructure and may represent deliberate operational targets rather than collateral damage.

Methods

This presentation draws upon contemporary literature from cyber security, disaster medicine, counter-terrorism medicine, and conflict health research, including published analyses of ransomware attacks, healthcare cyber incidents, attacks on health systems during armed conflict, and emerging threats associated with AI-enabled technologies.

Results

Healthcare cyberattacks have evolved beyond data theft and financial crime. Ransomware attacks have disrupted hospital operations, delayed treatment, increased morbidity and mortality, and degraded system-wide healthcare capability. Emerging evidence demonstrates the feasibility of manipulating medical images using AI, compromising the integrity of clinical records, and exploiting vulnerable

connected medical devices. These threats challenge the traditional information security focus on confidentiality and highlight growing risks to data integrity and availability. For military health systems, disruption of healthcare capability may directly impact force generation, casualty management, rehabilitation, medical evacuation, and operational decision-making.

Conclusion

The weaponisation of digital health represents an emerging health security challenge and a potential component of modern hybrid warfare. As healthcare becomes increasingly digitised, clinicians and military health leaders must recognise healthcare systems as strategic assets requiring protection. Building resilience will require improved cyber literacy, preparedness for degraded healthcare operations, and anticipatory governance frameworks capable of identifying and mitigating the second- and third-order consequences of digital health technologies before they are exploited.

Tourniquet de-escalation by non-medical Defence providers: Rationale, requirements and organisational preparedness for iatrogenic limb ischaemia at scale within mobility contested warfare

Dr Patrick Weinrauch^{1,2}

1 Australian Army, Brisbane, Australia.

2 Counter Terrorism and Operational Medicine, Central Queensland University, Rockhampton, Australia

Biography:

Orthopaedic Surgeon

The current Russo-Ukrainian War has exposed limitations in Tactical Combat Casualty Care (TCCC) tourniquet application protocols when employed in the absence of coordinated forward de-escalation measures. Traditional tourniquet management protocols, whilst proven within counter insurgency operations, are less suitable for combat environments dominated by extended duration evaluation resulting from contested mobility or longer distance transportation to advanced clinical care. To mitigate the risk of iatrogenic tourniquet ischemia within current and emerging warfare environments, a North Atlantic Treaty Organisation (NATO) expert panel in 2025 recommended extending tourniquet de-escalation interventions to include delivery

by appropriately trained non-medical military personnel. Consistent with these recommendations, the recently revised 2026 Joint Trauma System (JTS) CoTCCC guidelines now include an expectation for All Service Member (ASM) proficiency in the conduct of tourniquet de-escalation procedures.

This presentation will deliver the rationale for an organisational policy of universal forward tourniquet de-escalation and how these measures fit within a wider framework of organisational preparedness to manage iatrogenic limb ischaemia in modern warfare. Current CoTCCC guidelines and ADF initiatives to achieve tourniquet de-escalation capability at scale are discussed.

Understanding Burn Injury Requiring Intensive Care Injury in Australia

CDRE Anthony Holley¹

1 Australian Defence Force, Brisbane, Australia

Biography:

Associate Professor Anthony Holley, AM

Bsc. (microbiology) MBCh. DipDHM. DipPaeds. FACEM. FCICM. AFRACMA

CDRE Holley is a Senior Staff Intensivist at the Royal Brisbane and Women's Hospital. He is an Associate Professor at the University of Queensland. CDRE Holley is a Former ANZICS President and served on the Board and Executive for more than a decade. He is a former Senior Examiner for the Fellowship of the College of Intensive Care Medicine and serves as a representative for the National Blood Authority Critical Care Group in developing the Australian Patient Blood Management Guidelines.

He is currently serving in Joint Health Command, as the Principal Consultant Trauma to the Surgeon General Australian Defence Force (SGADF). This position is responsible to the SGADF for advising on ADF Trauma Care capabilities and strategy. CDRE Holley, previously served as the Director Navy Health-R and has deployed on active service on multiple occasions, including Bougainville, Timor, several tours to Afghanistan, four Iraq tours, Border protection, Persian Gulf maritime duty in HMAS Toowoomba, Bushfire assist and as the Queensland COVID-19 Task Force Senior Medical Officer. He was the recipient of the Navy Matthew Davey award, facilitating the study of deep-frozen blood products and assisted with integration of this technology into the ADF.

A survey of practicing intensivists was undertaken demonstrating the heterogeneity of practice in caring for critically injured burn patients in Australia. This then informed the development of a dedicated Critical Care Burns Registry, employing Delphi methodology. A RedCap registry, including a potential 192 data elements, across 13 specific domains, was created. All six Burn Referral ICUs in Australia contributed to the collection of prospective data from June 2025 to July 2026. More than 150 patients have been entered into the registry. This presentation will provide a detailed understanding of patients with burn injury in Australia, requiring intensive care. Demographics, extent of burn injury, complications, Length of stay, duration of mechanical ventilation, resuscitation strategies and outcomes will be described.

Understanding intensive care requirements for burn patients is important, both in the civilian and military environment. The registry will be useful in informing health planning and intensive care requirements in contemporary conflict, where burn injury will likely be more prevalent.

Understanding Vulnerability to Sport-Related Burnout in High Performing Young Adults: the contributions of ADHD Symptoms, Training Load and Perceived stress

LCDR Megan Hoare¹

1 Navy, Mosman/NSW, Australia

2 James Cook University, Townsville, Australia

Biography:

LCDR Megan Hoare is a Registered Nurse and Psychology Honours student at James Cook University with over 17 years of clinical leadership and education experience across civilian and military healthcare. She is currently serving as a Nursing Officer in the Royal Australian Navy as the SO2 Clinical Development in the Professional Development Organisation.

Her clinical background includes trauma, emergency and general nursing, as well as simulation based education and design. Megan has a long standing interest in mental health, neurodivergence, resilience and human performance which is informed by both her professional experience, career aspirations, and an extreme love of sports.

Her honours research, completed in September, examines the relationship between ADHD symptoms, perceived stress, training load and sport related

burnout in young adults. She hopes that by identifying factors that contribute to burnout, she can inform strategies to support mental health, wellbeing and sustainable performance in high performance settings, including the military.

Megan intends to pursue Masters of Clinical Psychology in 2027 and transfer employment categories from Nursing to Psychology. She has a long term goal of specialising in military and veteran mental health and well being by contributing to research that improves psychological outcomes across high performance populations.

Background

Burnout is increasingly recognised as a significant threat to mental health, wellbeing and performance in high-performance environments. Emerging adult athletes may be particularly vulnerable due to escalating training demands, developmental transitions and psychosocial stressors. While excessive training load has traditionally been viewed as a key contributor to athlete burnout, growing evidence suggests that individual psychological characteristics, including attention-deficit/hyperactivity disorder (ADHD) symptoms and perceived stress, may also influence vulnerability. A broader understanding of these factors may support earlier identification and targeted prevention strategies in sport and other high-performance domains.

Aim

To examine whether ADHD symptoms predict sport-related burnout in emerging adult athletes after accounting for training load, and to determine whether perceived stress contributes additional explanatory value.

Methods

This Honours study uses a cross-sectional survey design. Emerging adult athletes (18–25 years) participating in organised sport are being recruited via sporting organisations and social media. Participants complete validated measures of ADHD symptoms, perceived stress, training load and athlete burnout, alongside demographic and sporting characteristics. Hierarchical multiple regression analyses will assess the unique contribution of ADHD symptoms and perceived stress to burnout after controlling for training load and relevant covariates.

Results

Data collection is ongoing at the time of submission. Analyses will be completed prior to presentation. It is anticipated that ADHD symptoms and perceived stress will demonstrate significant independent

associations with athlete burnout, beyond the effects of training load. The relative contribution of each predictor will be reported.

Discussion

This study seeks to extend current models of athlete burnout by integrating psychological factors alongside traditional training-related variables. Findings are expected to inform screening and early intervention strategies aimed at enhancing mental health, well being and sustainable performance in emerging athletes. Although focused on a sporting population, the results may have broader relevance to other high-performance settings, including military and emergency services, where sustained cognitive and physical performance is critical.

Keywords

ADHD; athlete burnout; perceived stress; training load; emerging adulthood; mental health; high-performance

Veteran Mental Health and Wellbeing: Innovation, Engagement, and New Approaches to Care

Dr Rory Morris-Butler¹

1 Soul Medicine VAR, Sydney, Australia

Biography:

Dr Rory Morris-Butler MBBS, MRCPsych, FRANZCP (Maj Retd) is a Consultant Psychiatrist, former British Army Medical Officer, and Founder and CEO of Soul Medicine VAR, a veteran-led psychiatric service supporting current and former Australian Defence Force personnel across Australia.

After completing his medical degree at Norwich Medical School in England, Dr Morris-Butler undertook specialist psychiatry training through the South London and Maudsley NHS Foundation Trust and gained Membership of the Royal College of Psychiatrists in 2017. He relocated to Australia in 2018 and subsequently became a Fellow of the Royal Australian and New Zealand College of Psychiatrists.

Dr Morris-Butler served for 12 years in the British Army Medical Corps, including deployment to Afghanistan, where he provided frontline trauma and primary healthcare support to military personnel and local forces. He has worked across community, inpatient, liaison, forensic, rural, remote, occupational, and military psychiatry settings in both the United Kingdom and Australia.

He has a particular interest in veteran mental health, trauma, military psychiatry, innovative psychological interventions, and improving access to culturally informed care for veterans and serving personnel.

Military service can expose individuals to prolonged stress, trauma, operational demands, moral injury, and repeated psychological strain. While many serving and former Australian Defence Force (ADF) members transition successfully following service, others experience ongoing mental health challenges that may affect wellbeing, relationships, identity, employment, and day-to-day functioning.

Despite increasing awareness surrounding veteran mental health, many individuals remain reluctant to engage in traditional treatment pathways. Barriers such as stigma, distrust, fear of judgement, treatment fatigue, geographic isolation, and difficulty revisiting traumatic experiences may contribute to delayed help-seeking or disengagement from care altogether. This highlights the importance of developing approaches that are accessible, psychologically safe, and responsive to the unique experiences of veterans.

This presentation explores emerging approaches to veteran mental health and wellbeing, with a focus on improving engagement, accessibility, prevention, and early intervention for current and former serving personnel. It will examine how veteran-informed and trauma-aware models of care may assist in creating more effective pathways for individuals who may not respond well to conventional treatment environments, while also supporting resilience, recovery, and long-term wellbeing.

The presentation will discuss the importance of culturally aware, compassionate, and accessible models of care, as well as the growing role of early intervention, telehealth, multidisciplinary collaboration, peer-informed support frameworks, and recovery-focused approaches within veteran mental health services. It will also explore emerging brief intervention models designed to reduce distress and intrusive trauma symptoms without requiring prolonged verbal recounting of traumatic events, particularly for veterans who may struggle to engage with conventional therapies.

Importantly, the discussion will move beyond diagnosis alone and consider mental health within the broader context of wellbeing, identity, social connection, occupational functioning, family relationships, and transition beyond military service. The presentation will highlight the importance of psychologically safe environments and proactive systems of support that encourage individuals to seek assistance before crisis occurs.

As Australia continues to examine new ways to support veterans and their families, there is increasing recognition that innovation, accessibility, prevention, and early intervention must form part of future mental health strategies. This presentation aims to contribute to the broader discussion regarding how military medicine and veteran health services can continue evolving to better meet the needs of those who have served.

We Train Hard – So Why Don't We Always Learn? Translating Experiential Learning into Military Medical Practice

MAJ Jeremy Barraclough¹

1 Army, Sydney, Australia

Biography:

Major Jeremy Barraclough has had a diverse career within Army and has served both domestically and on deployments internationally. For service with NATO's Special Operations Command – Afghanistan he was awarded the United States Army Meritorious Service medal. He holds a Bachelor's degree in Organisational Leadership from University of New England and a Master's in Special Operations from the University of New South Wales.

Military health services operate in environments no different from other combat operations which are defined by complexity, uncertainty, time pressure, and risk. Despite extensive training, simulation, and real-world experience, healthcare teams—like their combat counterparts—often encounter recurring issues in communication, decision-making, leadership, and system performance. This presentation argues that the core problem is not a lack of exposure to challenging clinical, training scenarios or real-world actions, but a failure to systematically convert experiences into sustained learning and behavioural change. Drawing on Australian Army training practice and leadership doctrine, this presentation translates the principles of the experiential learning cycle into the context of learning for military medicine and proposes a practical framework to enhance clinical and team performance.

The presentation first highlights a common pattern across combat and other environments: high activity without consistent learning. In military medicine, this could manifest in repeated errors, communication breakdowns during high-acuity scenarios, and limited transfer of lessons from

simulations, exercises, or real-world cases into routine practice. Experience alone—whether in a field exercise, simulation lab, or deployed clinical setting—does not guarantee improvement. Learning requires deliberate processing.

The experiential learning cycle—experiencing, reflecting, generalising, and applying—provides a structured method to transform clinical experience into capability. Military medical teams are already proficient at creating realistic and stressful training environments, including simulation-based scenarios, mass casualty exercises, and operational deployments. However, the effectiveness of these activities is often limited by how reflection is conducted. Without structured, facilitated reflection, insights remain superficial or are lost entirely.

This presentation places particular emphasis on the role of debriefing (an analogue to the military After Action Review). It identifies common failure modes that could occur in medical debriefs that closely mirror those seen in military training: dominance by senior clinicians, focus on technical events rather than behavioural and cognitive factors, checklist-style reviews that bypass genuine reflection, and failure to translate identified issues into actionable change. These practices limit psychological safety, suppress junior voices, and reduce the effectiveness of learning.

To address this, the presentation proposes a facilitation-focused approach to clinical debriefing grounded in adult learning principles. Leaders—

whether commanders, senior clinicians, or team leads—must shift from instructing to facilitating. Effective debriefs should prioritise inclusive participation, emphasise team behaviours and decision-making under pressure, and guide discussion through a simple, structured sequence: “What happened?”, “So what does that mean?”, and “Now what will we do differently?” This approach enables teams to develop shared understanding, uncover cognitive and emotional drivers of performance, and commit to specific behavioural changes.

Importantly, the presentation emphasises that learning is only realised when application occurs. Clinical and organisational improvements require explicit commitments, accountability, and follow-through across subsequent training and operational cycles. Embedding these practices strengthens clinical governance, enhances team performance, and improves patient safety and outcomes.

The implications for military medicine are significant. By adopting disciplined experiential learning practices, health services can better prepare clinicians and teams for the realities of operational care, improve adaptability under pressure, and reduce the repetition of preventable errors. The presentation concludes that improving how military medical teams learn—from simulation suites to deployed environments—is critical to enhancing both operational effectiveness and patient care

Credentialling and Orientating Military IMGs: Lessons from an Australian Civilian Hospital

Dr Felix Ho¹

¹ NT Health, Darwin, Australia

Biography:

Felix Ho is a medical practitioner with a background in health service delivery and clinical governance. He has contributed to initiatives aimed at strengthening civil-military cooperation, particularly in the orientation and credentialling of international medical graduates working in Australian hospitals. His work centres on improving clinical readiness, regulatory navigation and sustainable workforce integration.

International military health professionals frequently deploy to Australia as part of integrated multinational teams. Maintaining clinical practice can be challenging, particularly for specialist medical practitioners, due to limited opportunities for clinical contact and the absence of Australian professional registration.

Securing registration is a complex process. Professions such as medicine and nursing require registration through their respective boards under the Australian Health Practitioner Regulation Agency (AHPRA). For doctors, international medical graduates (IMGs) must undertake an approved assessment pathway; Standard, Competent Authority or Specialist, before being eligible for registration. Once registered, IMGs complete orientation and credentialling processes to ensure they can safely and effectively contribute within civilian hospital settings.

Despite the challenges, the integration of military IMGs into civilian health environments offers significant benefits. These include enhanced skills translation, additional workforce capacity within an already pressured health system, strengthened community relationships and improved maintenance of clinical competence for deployed personnel.

This presentation outlines the experience of a civilian hospital in supporting, credentialling and orientating military IMGs. It highlights practical challenges, lessons learned and opportunities for improving collaboration between military and civilian health systems.

From Malaria Prophylaxis to Mental Health: Exploring the Role of Doxycycline-Induced Microbiome Disruption and Probiotic Mitigation in Defence Populations

Sharnay Gilbert¹

¹ Aspen Medical, Gold Coast, Australia

Biography:

Sharnay Gilbert is a Registered Nurse and former Paramedic with over 15 years of frontline clinical experience across pre-hospital and acute care environments. She joined Aspen Medical in 2024 on the JP2060 project, where her interest in military medicine was sparked through exposure to deployable healthcare systems.

She is currently the Project Lead for GP Services in Digital Health, focusing on delivering innovative, technology-enabled models of care.

Sharnay's research interest was driven by observing the higher incidence of PTSD in defence personnel compared to civilian clinicians, despite similar exposure to trauma. This led her to explore broader biological contributors, including the impact of routine antibiotic use on the gut microbiome and its potential influence on mental health.

She is passionate about advancing practical, preventative healthcare strategies that improve outcomes for defence and veteran populations.

Mental health conditions, including post-traumatic stress disorder (PTSD), anxiety, and depression, are highly prevalent among Australian Defence Force (ADF) personnel and veterans. While psychological and environmental factors remain central to understanding these conditions, emerging evidence highlights the role of biological contributors—particularly the gut microbiome—through its interaction with the central nervous system via the gut-brain axis (1,2).

Doxycycline is routinely prescribed within defence populations for malaria prophylaxis during deployment and training in endemic regions. While effective, doxycycline is associated with alterations in gut microbiota composition, contributing to dysbiosis and gastrointestinal disturbance (3,4). Increasing evidence suggests that such disruptions may extend beyond gastrointestinal effects, influencing neuroinflammation, neurotransmitter production, and stress response systems implicated in mental health disorders (2,5).

This presentation explores the hypothesis that repeated or prolonged exposure to doxycycline in ADF populations may contribute to cumulative microbiome disruption, potentially increasing susceptibility to mental health conditions both during and after service. Factors common in military environments—including chronic stress, sleep disruption, dietary variability, and environmental exposures—may further exacerbate microbiome instability, compounding risk (6).

The gut–brain axis provides a mechanistic framework linking these effects, with microbiota influencing brain function through immune, endocrine, and neural pathways. Alterations in microbial diversity have been associated with PTSD and depression, with emerging studies identifying distinct microbiome profiles in affected individuals (5,7).

Probiotics represent a low-risk, accessible intervention with potential to mitigate antibiotic-associated dysbiosis and support microbiome resilience. Evidence supports their role in reducing antibiotic-associated gastrointestinal symptoms and suggests potential benefits in modulating mood, anxiety, and stress responses (8,9). Despite this, routine probiotic co-administration with doxycycline is not standard practice within most defence health protocols.

This presentation synthesises current evidence and operational considerations to examine the potential benefits of incorporating probiotics into routine prophylactic regimens for ADF personnel. Practical considerations—including strain selection, storage in austere environments, adherence, and clinical governance—will also be explored.

By reframing gastrointestinal side effects of prophylactic medications as potential contributors to broader physiological and psychological outcomes, this approach highlights a novel opportunity for preventative intervention. Addressing microbiome health alongside essential medication use may support both short-term wellbeing and long-term mental health outcomes in defence populations.

While further research is required to establish causality and optimise protocols, this integrative model represents a scalable strategy for enhancing force health protection and veteran care. It is relevant to military clinicians, policymakers, and researchers seeking innovative approaches to improving resilience and reducing mental health burden across the defence community.

- Cryan JF, O'Riordan KJ, Cowan CSM, et al. The microbiota–gut–brain axis. *Physiol Rev*. 2019;99(4):1877–2013.

- Foster JA, McVey Neufeld KA. Gut–brain axis: how the microbiome influences anxiety and depression. *Trends Neurosci*. 2013;36(5):305–312.
- Becattini S, Taur Y, Pamer EG. Antibiotic-induced changes in the intestinal microbiota and disease. *Trends Mol Med*. 2016;22(6):458–478.
- Abt MC, Pamer EG. Commensal bacteria mediated defenses against pathogens. *Curr Opin Immunol*. 2014;29:16–22.
- Hemmings SMJ, Malan-Müller S, van den Heuvel LL, et al. The microbiome in posttraumatic stress disorder and trauma-exposed controls. *Psychosom Med*. 2017;79(8):936–946.
- Karl JP, Hatch AM, Arcidiacono SM, et al. Effects of psychological, environmental and physical stressors on the gut microbiota. *Front Microbiol*. 2018;9:2013.
- Jiang H, Ling Z, Zhang Y, et al. Altered fecal microbiota composition in patients with major depressive disorder. *Brain Behav Immun*. 2015;48:186–194.
- Hempel S, Newberry SJ, Maher AR, et al. Probiotics for the prevention and treatment of antibiotic-associated diarrhea. *JAMA*. 2012;307(18):1959–1969.
- Wallace CJK, Milev R. The effects of probiotics on depressive symptoms in humans: a systematic review. *Ann Gen Psychiatry*. 2017;16:14.

From preparedness to response; strengthening the workforce, pre-crisis

Mrs Koryn Roberts¹

¹ RAAF, Australia

Biography:

Koz joined the RAAF twenty years ago, as a Nursing Officer and has worked as a nurse in theatre, ICU, acute neurosurgery and emergency. A passion for trauma and emergency nursing has led Koz back to school, completing a graduate certificate and masters in acute care / trauma and Emergency Nursing; knowledge she puts into practice by working as a causal in a QLD ED.

Koz's military service has seen her posted to WLM, TDL, RIC, Wagga and AMB, providing primary, emergency,

and aeromedical health services, domestically and overseas, and ran a health centre during the peak of CoVID. Posting have also included HQHSW, working in OPS, and HQCSG, CCCC, planning and coordinating the RAAFs enabling functions of operations and exercises.

Koz's is the deputy chair of the Military Faculty in the Australian College of Nursing, providing an avenue to channel her commitment to the growth and development of nurses and the nursing profession. Koz is also a board member on the Belinda McGowan Foundation, which facilitates the placement of cuddle beds to support palliative patients and their families during their deaths.

The Bullwinkel scholarship provided me the opportunity to not only grow myself as a health leader, but the opportunity to contribute to the growth of the workforce. I chose to focus on who we can best generate a crisis ready workforce, without prior lived crisis experience.

Crisis comes in many forms, infectious disease outbreaks, mass causality events, natural disasters, and conflict.

Through robust professional development programs, we have grown a workforce of highly educated and clinically skilled health professionals. How do we best train for the darker side of health care; for the death (natural and more so, the traumatic). How do we train for the long hours, limited resources, increasing demands, and the confronting face of self-focused, panicked humans that crisis brings out. How do we prepare ourselves for this, without anaesthetising our empathic side, the side that many argue is crucial in health care? How do we grow this without causing harm through unnecessary exposure to traumatic events, without increasing the likelihood of moral injury, vicarious trauma and burnout?

This presentation will outline the research project premise, what was found through the project and the next steps.

Holistic Health and Fitness: Reimagining Military Health Through Integrated Human Performance and Readiness

A/Prof Derrick Tin^{1,2}, Ms Terri Antonio²

¹ University of Melbourne, Australia

² SERCO, Sydney, Australia

Biography:

Dr Derrick Tin is a US fellowed Disaster Medicine Specialist with a special interest on the health impact of conflict and terrorism. He is an Associate Professor of Critical Care Medicine at the University of Melbourne and the Chief Medical Officer at SERCO.

Background

Modern military capability depends on more than treating illness and injury. Operational effectiveness requires physically resilient, cognitively agile and psychologically prepared personnel capable of sustaining performance in increasingly complex environments. Traditional military healthcare systems have largely focused on the diagnosis and treatment of disease after it occurs. In contrast, the United States Army's Holistic Health and Fitness (H2F) system represents a paradigm shift towards proactive optimisation of soldier performance through an integrated, multidisciplinary model that embeds health professionals directly within operational units. Team Serco currently delivers key components of this capability through embedded Strength and Conditioning Coaches and Cognitive Performance Specialists working alongside military leadership and healthcare professionals to optimise readiness, reduce injury burden and improve long-term force health.

Purpose

This presentation will explore the principles underpinning the H2F model, examine how integrated human performance teams enhance military readiness, and discuss the potential application of similar concepts within the Australian Defence Force and other military organisations.

Overview

The H2F model extends beyond physical fitness by integrating multiple domains of performance including physical conditioning, cognitive performance, nutrition, injury prevention, rehabilitation and occupational health. Rather than functioning as isolated services, these disciplines operate as an embedded performance team supporting soldiers throughout the training and operational continuum. Strength and Conditioning Coaches and Cognitive Performance Specialists deliver individualised performance interventions, monitor progression, educate personnel on injury mitigation strategies and work closely with unit leadership to align health initiatives with operational requirements. This embedded approach enables earlier identification of performance limitations, promotes resilience before injury occurs, and supports rapid return to duty when injuries arise.

Importantly, H2F represents a cultural change as much as a healthcare model. Health professionals become integral members of operational teams rather than external providers, fostering trust, accessibility and continuous engagement. By combining evidence-based physical training with cognitive skills development, stress management and behavioural performance strategies, the program aims to optimise both individual and collective readiness while reducing preventable musculoskeletal injuries, one of the leading causes of military attrition and lost operational capability.

Discussion

As defence forces worldwide confront evolving operational demands—including multidomain operations, increased cognitive workload, prolonged deployments and workforce retention challenges—there is growing recognition that military health systems must move beyond reactive healthcare towards proactive performance optimisation. The H2F framework provides an example of how multidisciplinary integration can support force generation by simultaneously improving health, resilience, recovery and operational effectiveness.

For Australia, this approach raises important questions regarding future workforce design, clinical governance, integration of allied health professionals within operational units, and the role of human performance as a core component of military capability. While implementation would necessarily reflect Australian organisational structures and operational requirements, the underlying principles offer valuable insights for future defence health transformation.

Conclusion

Holistic Health and Fitness represents a contemporary evolution in military health, positioning health and wellbeing as strategic enablers of operational readiness rather than solely healthcare outcomes. By embedding multidisciplinary expertise alongside military units, H2F demonstrates how integrated human performance programs have the potential to enhance resilience, reduce injury, optimise cognitive and physical performance, and ultimately strengthen force capability. As defence organisations continue to modernise, integrated human performance models may become a defining feature of future military health systems.

Joint Medic Training Continuum - Bridging workplace exposure with capability outcomes

Mr Jayden Pyper¹

1 ADF-Army, Australia

Biography:

Warrant Officer Class 2 Pyper was born in Ouyen, Vic in 1984. He enlisted in the Army in March 2003, and after graduating Kapooka, he was allocated to the Royal Australian Army Medical Corps and initially served at the Oakey Medical Centre. He has been posted to a number of different locations in diverse clinical roles. In 2020, Warrant Officer Pyper was promoted to Warrant Officer Class 2 and posted to Employment Category and Training Design - Health Cell, where he performed the role of lead training designer for ECN 368 training continuum. He also played a key role in the Defence Force Remuneration Tribunal submission for the new employment category. Warrant Officer Pyper was awarded the CF Marks award for his efforts in this role. In 2024 he was posted to the ADF School of Health to work with standards and in the military instructor group. His operational experience includes Operation SLIPPER Afghanistan in 2008-09; Operation CATHEDRAL Papuan New Guinea in 2012; Operation HIGHROAD Afghanistan in 2018-19 and Operation COVID-19 Assist in the Melbourne health Headquarters in 2020.

Medics comprise approximately 1.5% of the Australian Defence Force (ADF) workforce, yet deliver critical health capability across deployed, domestic, and garrison settings (Army Strategic Workforce Plan, 2017). They provide primary and emergency care in austere environments, support force readiness, and contribute to domestic operations during national emergencies. Sustaining this capability over the next 5–10 years requires deliberate alignment between workforce planning, human resource development (HRD), and evolving operational demands.

Recent environmental scans identify pressures likely to influence the medic workforce, including increasing clinical expectations, distributed employment, and sustained operational tempo (Conway, 2012). Workforce planning provides a structured approach to analysing current and future capability requirements, enabling targeted investment in key risk areas (Sparkman, 2018). Within the ADF, the Systems Approach to Defence Learning (SADL) process links HRD and capability development, supporting this alignment.

The Joint Medical Continuum (JMEDC) has been designed to address these challenges by integrating

the strengths of both traditional course-based training and workplace-based learning. It retains the assurance and standardisation provided by formal education, while incorporating continuous, workplace-integrated development. Learning is primarily self-paced and supported by structured workplace mentoring, an approach associated with improved competency outcomes and professional growth (Nok & Kim, 2019). Collaborative practice and case-based learning are also used to strengthen clinical reasoning and application in operational contexts (Hassain, 2012; Pendry & Salvatore, 2015).

A key feature of the JMEDC is the recognition of workplace experience as valid evidence of competence alongside formal assessment. Previous models relied heavily on course attendance for validation, even where individuals were already performing at the required standard. The JMEDC incorporates both approaches. Formal training remains essential for standardisation and governance, while workplace performance provides context, reinforcement, and depth. This combined model supports consistency without disregarding the value of operational experience.

The approach also strengthens the role of unit leadership in capability development. By embedding training and assessment within the workplace, supervisors are more directly involved in supporting skill acquisition and application. This does not replace formal training responsibilities but complements them. It encourages a learning culture in which routine activities are leveraged to build competence, and where leaders actively support development through exposure and feedback (Rowden, 2007).

The JMEDC aligns with established principles of clinical education. Effective programs extend beyond knowledge acquisition and focus on clinical reasoning, decision-making, and professional judgement (Ballenden, 2001). To achieve this, the learner must engage in repeated cycles of experience, reflection, and application within the workplace. They need to be exposed to new experiences and workplace challenges that enable them to metaphorically 'exercise new muscle', as information only becomes knowledge when it is combined with experience and judgement (Rowden, 2007). This deliberate integration of practice and reflection ensures that learning is contextualised and retained. It is the judgement aspect of learning that provides the linchpin to developing resilience in clinical practice. Learners must apply knowledge in varied and often uncertain environments. The inclusion of real-world experience, structured reflection, and guided mentorship supports this process. Competence is

demonstrated through performance across contexts rather than isolated assessment events.

Implementation requires balance. The framework must maintain sufficient structure to ensure governance, consistency, and clinical safety, while remaining flexible enough to accommodate diverse employment settings. Content must be robust, relevant, and aligned with operational requirements. Success will depend on sustained engagement from both the workforce and unit leadership.

The JMEDC provides a practical, integrated model for developing and sustaining ADF medic capability. By combining formal training with workplace-based learning, it strengthens clinical competence, supports workforce adaptability, and aligns HRD efforts with the ADF's strategic health objectives.

Neuropsychology Findings in Veterans Reporting Cognitive Decline

Dr Patrick Arulanandam¹, Dr Jasmina Vrankovic¹, Dr Leon Smith¹, Dr Andrew Liu¹

1 Concord Hospital National Centre For Veterans' Healthcare, Sydney, Australia

Biography:

Patrick Arulanandam is a rehabilitation medicine physician based at Concord and RPA Hospitals. He is the acting medical director of the Concord Hospital National Centre for Veterans' Healthcare. His research interests include cognitive rehabilitation, stroke rehabilitation and rehabilitation models of care.

Background

Serving Defence Force members and veterans experience high rates of subjective cognitive concerns which may be related to the physical and psychological impacts of military service. Causes of cognitive decline can include both organic (e.g., traumatic brain injury, neurodegenerative conditions) and non-organic (e.g., psychological disorders, chronic pain) factors.

Aim

This study aimed to identify the primary causes of subjective cognitive concerns in patients attending a multidisciplinary veterans' health service, with a focus on differentiating between organic and non-organic contributors to cognitive impairment.

Methodology

Cognitive diagnosis was obtained from the neuropsychological assessments of 152 veterans

who reported subjective cognitive concerns and underwent comprehensive neuropsychological assessment between 2020 and 2026. These assessments evaluated baseline cognition, general intellectual functioning, and specific cognitive domains including attention, processing speed, language skills, visuospatial skills, memory, and executive function. Cognitive impairment was defined as performance at least one standard deviation below the formally estimated premorbid baseline.

Results

Of the 152 tested patients, mean age was 48 (range 21 to 85), and 88% were male. 91 patients (60%) had intact cognition, characterised either by no objective evidence of cognitive impairment across any tasks, or some isolated low scores of uncertain clinical significance (a common psychometric phenomenon inherent to such long assessments). 37 patients (24%) had cognitive impairment from an organic cause, and 14 patients (9%) had cognitive impairment due to a psychological disorder. Ten patients (7%) showed suboptimal effort during testing, which invalidated their assessment. Organic causes of cognitive impairment in this cohort were most commonly multifactorial, including traumatic brain injury, neurological disorders, vascular disease, and substance use disorders.

Conclusion

Cognitive concerns in patients attending this multidisciplinary veterans' health service are multifaceted. There is a high rate of intact cognitive function despite subjective concerns, so these patients may benefit from reassurance and prioritising treatment of contributing conditions. For those with objective impairment, both organic and non-organic disorders contributed. Further studies are needed to inform effective interventions and treatment approaches, particularly for reversible causes of cognitive decline.

Should Military Medicine Have a Greater Place in Medical Education?

Mr Thomas Cranfield¹, Dr Andrew Mathieson¹

¹ Australian National University, Canberra, Australia

Biography:

Thomas Cranfield is a 2nd year undergraduate student at the Australian National University studying a Bachelor of Health Science, with aspirations to study medicine and serve in the ADF. His research interests lie within military medicine, military history, trauma

care, medical education and Defence Health Policy.

Thomas has presented and undertaken research across a range of health topics including the quality and accessibility of veteran's health care in Australia, the evolving health profiles of prospective applicants to the ADF and the integration of military health history and principles into undergraduate / postgraduate curricula.

Thomas aims to continue research across a range of defence related health topics and is committed to pursuing a clinical career within the Australian Defence Force. His ongoing work aims to gather evidence and raise awareness to discussions within a university cohort to opportunities and challenges facing military medicine in Australia.

Military medicine has played a pivotal role in shaping modern healthcare, contributing to advances in trauma management, blood transfusion, rehabilitation, evacuation medicine, infection control and damage-control surgery. Beyond these historical contributions, military medicine continues to provide contemporary models of healthcare delivery in austere, humanitarian, disaster and operational environments. Despite its enduring influence, military medicine receives little explicit attention within most undergraduate and postgraduate medical curricula, leaving many graduates with limited understanding of veteran health, operational healthcare, disaster preparedness and the broader systems-based challenges of delivering care under conditions of uncertainty.

This paper examines whether greater integration of military medicine into medical education could strengthen the knowledge, skills and professional capabilities expected of contemporary medical graduates. Rather than advocating military service, it considers military medicine as an educational framework through which students can better understand the evolution of modern clinical practice while developing transferable competencies in leadership, multidisciplinary teamwork, ethical decision-making, systems thinking, communication and resource-limited practice. These capabilities closely align with the Australian Medical Council (AMC) Graduate Outcome Statements, particularly in relation to clinical decision-making, professionalism, leadership, culturally safe practice and health advocacy, while also reflecting the CanMEDS Physician Competency Framework roles of Medical Expert, Leader, Collaborator, Communicator, Health Advocate, Professional and Scholar. Furthermore, the operational principles underpinning military medicine strongly complement recognised disaster medicine competency frameworks that emphasise

preparedness, triage, risk communication, coordination and adaptive decision-making during emergencies.

Current medical curricula appropriately prioritise the development of safe and competent clinicians; however, opportunities remain to better integrate learning relating to veteran health, humanitarian medicine, disaster preparedness and operational healthcare. These areas are increasingly relevant as Australia experiences more frequent natural disasters, evolving geopolitical uncertainty and an ageing veteran population with complex physical, psychological and social healthcare needs. Military medicine provides authentic, systems-based examples that integrate clinical excellence with leadership, logistics, ethics, public health and multidisciplinary teamwork, offering students

valuable insights into managing complexity across both military and civilian healthcare settings.

Military medicine should be viewed not as a niche specialty, but as an underutilised educational resource that supports established graduate competency frameworks. Greater recognition of its historical, clinical and societal contributions has the potential to enrich medical education, strengthen graduate preparedness for complex healthcare environments, and improve understanding of the unique healthcare needs of defence personnel and veterans. As healthcare systems confront increasingly complex humanitarian, environmental and security challenges, military medicine warrants renewed consideration as an important component of contemporary medical education.

A Population-Based Assessment of Human Security Indicators to Determine Progress on the Ukrainian National Action Plan

Professor Lynn Lieberman Lawry^{1,4},
Dr Kimberly T Johnson-Boua¹, Dr Jana
Asher², Ms Kateryna Lund¹, Ms Vivitha
Mani^{3,4}, Dr Olena Nesterova⁵, Dr Olga
Gvozdetska⁵

1 Uniformed Services University of the Health Sciences, ,
Bethesda, United States

2 Statistical Consultant, Pittsburgh, United States

3 The Henry M. Jackson Foundation for the Advancement
of Military Medicine, Inc, Bethesda, United States

4 Center for Health Services Research, Bethesda, United
States

5 Center for Public Health of the Ministry of Health of
Ukraine, Kyiv, Ukraine

Biography:

Dr Lieberman Lawry is a physician, epidemiologist, and biostatistician more than three decades of experience in humanitarian aid, disaster response, development, and research. She spent 20 years as faculty at Brigham and Women's Hospital, Harvard Medical School, with concurrent appointments with the Department of International Health, Bloomberg School of Public Health, Johns Hopkins and Uniformed Services where she is currently a Professor of Preventive Medicine and Biostatistics. She has extensive experience in dozens of countries coordinating aid, facilitating development, and conducting population-based studies in conflict and post-conflict settings. Her studies elucidate the needs of populations regarding human rights, healthcare access, mental health, and conflict-related sexual violence among many other public health topics - utilizing these data to improve policy to address global health needs in conflict. Her current focus is trauma system assessments in large-scale combat for understanding needs and gaps for preparedness. She is currently finishing a nationally-representative study of war-related abuses and mental health consequences in Ukraine. In addition to teaching at USUHS, she developed interactive courses for international militaries who serve as Peacekeepers in 48 countries on preventing sexual exploitation and abuse and CRSV and as global health engagements for security cooperation in the human security space.

Background

Since the full-scale Russian invasion of Ukraine, the Ukrainian National Action Plan (NAP) has become extremely important in creating conditions for the

participation of both women and men in conflict resolution, peacebuilding, recovery, in addressing security challenges, and systemic responses to conflict-related violence (CRSV) in alignment with the United Nations Security Council Resolution (UNSCR) 1325. This study aimed to quantitatively assess the progress of the stated goals in the NAP among respondents in Ukraine.

Methods

We conducted a population-based, cross-sectional household quantitative study in 20 of 24 oblasts in Ukraine during a two-month period from 01 May to 29 June 2025. Using the NAP as a guideline, this assessment included 44 questions that pertain to human security, to assess agreement or disagreement with statements related to participation, prevention, protection and relief and recovery pillars.

Results

Of the 4385 households surveyed, respondents from 4228 households completed the study, yielding a response rate of 96%. Overall, all population subgroups also agreed that women have leadership roles in the military and be part of peace building processes. All agreed the government had "somewhat met" the goal of doing enough to protect civilians from CRSV with sex differences on whether military were protected from CRSV. All agreed the government was doing enough to provide psychological assistance to civilian and military personnel who experienced CRSV and that medical services were readily available for survivors. Only one of the indicators scored low enough to be considered "not met". This was because this question was scored on a reverse scale to account for the impact CRSV had on women and girls without recognition that men and boys are also at risk.

Conclusions

The findings in the study suggest that Ukraine has made significant strides in meeting their NAP goals and targets despite being in the middle of a war. The majority of the human security indicators assessed were either "met" or "somewhat met". There were, however, statistically significant sex disaggregated differences among civilians and those with military experience under several of the pillars, suggesting there is room for improvement and a shift in the mindset, particularly among males with regard to leadership and peacebuilding roles for females in Ukraine to ensure lasting peace agreements and stability.

AI-native Physiological Guided Microwearable Sensors for Hydration, Health & Defence Force Readiness

Mr Jeff Bryant¹, Mr Sean Ryan

¹ WearOptimo Pty Ltd, Australia

² Aspen Medical, Australia

Biography:

Jeff has 30 years of technology focussed commercial experience working directly for and as a consultant with local and international health and medical tech, life science and clinical diagnostics companies, including senior roles at Microbio Australia, Devyser AB, Agena Bioscience, Sequenom, BD, and Bio-Rad Laboratories. He specialises in bringing new innovative technologies to market, strategic market development, commercial strategy planning and execution, strategic market entry and penetration, and sustained sales growth. Over his career Jeff has built and led high-performing commercial teams, including commercial technology sales and support operations internationally and developed robust strategic channel distribution partnerships and key account strategies across global markets.

Jeff is currently the Head of Commercialisation at WearOptimo and leads the commercial go-to-market planning and execution including commercial engagement with channel partners such as Aspen Medical and engaging with early-stage customers across the Defence, Resources and Elite Sporting sectors.

Climate change is materially intensifying the operational health challenge posed by heat, with hotter, more humid and less predictable conditions placing growing pressure on personnel operating across equatorial regions, hot temperate environments, and northern Australian training areas. These are the environments in which military forces must continue to train, deploy, and sustain readiness, and where heat stress and mis hydration can quickly degrade cognition, reaction time, decision quality, physical output and overall deployability. Current controls such as work/rest tables, wet bulb monitoring, awareness training, urine colour checks and self-reporting remain important, but they are blunt instruments: they assess environmental conditions or broad population assumptions rather than the real time physiological state of the individual soldier under load, in protective equipment, and under operational stress.

Micro wearable continuous hydration monitoring devices offer a materially different capability for the military. Worn as a small adhesive patch on the arm or shoulder, using minimally invasive microelectrodes to access relevant bio signals just beneath the skin's surface and provide continuous hydration risk monitoring in a practical, unobtrusive form factor suited to field conditions. This creates the opportunity to identify evolving dehydration risk earlier, before it contributes to training stoppage, avoidable loss of deployable force, fatigue and degraded performance, heat exhaustion, heat stroke, evacuation, or death.

Its operational value lies in supporting both the individual and the operational commander. Timely alerts can enable hydration, cooling, pacing, rest, task adjustment, or medical escalation, while aggregated visibility can better inform commanders and medical professionals on force readiness in hot and humid conditions. This shifts the current approach to heat stress and mis hydration from not simply monitoring exercise, but to a military human performance and force enhancement capability.

An Immersive Mixed Reality Approach to Tactical Medical Training in Military Medicine

Dr. Dale Linegar¹, Mr. Sven de Vries², Mr. Michael Schinkel², Mr. Benjamin Krynski¹

¹ BlueRoom Simulations, Clayton South, Australia

² Defence Healthcare Education and Training Centre (Netherlands Ministry of Defence), Hilversum, Netherlands

Biography:

Dr. Dale Linegar is Chief Technology Officer at BlueRoom Simulations, leading the development of mixed reality solutions for defence, healthcare, and emergency services. He holds a PhD from RMIT University and specialises in serious games, simulation, and immersive learning. Ben Krynski, co-founder and CEO of BlueRoom Simulations, is an experienced pre-hospital clinician and business leader driving the development of practical mixed reality training systems that enhance preparedness and performance across defence, emergency services, and healthcare. Together, the authors combine expertise in defence medicine, simulation, immersive technologies, human performance, and digital transformation to improve military medical training. Sven de Vries leads technology and digital transformation at the Defence Healthcare Education and Training Centre of the

Netherlands Ministry of Defence, advancing military medical education and readiness through technology-enabled learning. Mike Schinkel brings extensive military and healthcare operational experience, focusing on human performance, education, and readiness in complex environments. -

Mixed reality (MR) integrates real and virtual environments, enabling users to interact simultaneously with physical and digital elements in real time. Within military medical education, MR has emerged as a promising approach for bridging the gap between technical skills training and performance under operational stress. The BlueRoom Mixed Reality Medical Simulator (BlueRoom) was developed as an immersive extended reality training environment designed to enhance contextual realism, situational awareness, and decision-making during medical and tactical combat casualty care training.

An anonymous post-training evaluation was conducted following BlueRoom sessions delivered as an adjunct to military medical education for the Royal Netherlands Army. Participants (n=84-86 responses per item) completed a five-point likert-scale survey assessing engagement, immersion, realism, perceived stress exposure, educational value, and usability. Open-ended responses were analysed thematically to identify strengths and areas for improvement.

Learners rated BlueRoom highly as an engaging learning method (mean 4.2/5) and a valuable addition to the training programme (4.1/5). Scenario immersion and empathy were positively perceived (4.0/5), while participants reported that the environment enabled practice of medical actions under increased tension (3.7/5). Perceived realism was moderate to high (3.5/5). Adverse effects such as nausea or dizziness were limited (2.0/5). Qualitative feedback highlighted opportunities to improve visual fidelity, ergonomics, movement freedom, equipment realism, and multisensory environmental cues. Participants also advocated stronger integration with physical casualty care models and progressively complex scenarios.

Consistent with emerging evidence supporting immersive technologies in medical training, BlueRoom demonstrates potential as a blended MR training platform that enhances engagement, contextual stress exposure, and operational relevance. These findings support continued development of MR-enabled military medical simulation and further investigation of its effects on skill transfer, decision-making under pressure, team performance, and operational readiness.

Augmenting Expeditionary Medical Capability: IQARUS Forward Surgical Teams in Multinational Operations

Professor Mansoor Khan¹, Mr Jonathan Kendrew

1 Iqarus Gulf Fz Llc, United Arab Emirates

Biography:

Professor Mansoor Khan is a trauma and humanitarian conflict surgeon whose career spans frontline medicine, executive leadership, entrepreneurship, and investment. His work uniquely bridges the high-stakes precision of the operating theatre with the strategic demands of global organisations, reflecting a rare ability to lead across both clinical and corporate arenas.

Internationally recognised in the surgical field, Professor Khan has extensive experience in trauma care, complex surgical environments, and austere humanitarian settings. He currently serves as Regional Medical Director at Iqarus, where he provides clinical leadership and operational oversight across diverse regions. In this role, he is responsible for ensuring the delivery of high-quality medical services in challenging environments, guiding multidisciplinary teams, shaping clinical governance frameworks, and aligning medical operations with broader organisational strategy.

His career is defined by adaptability, disciplined execution, and a deep commitment to impact. Whether advancing surgical care in high-risk settings, leading regional medical operations, advising ventures, or investing in innovative projects, he brings a consistent philosophy: innovation grounded in experience, empathy informed by service, and an uncompromising pursuit of excellence.

His work is marked by measurable outcomes and transformative influence, establishing him as a trusted leader and multidisciplinary professional with a truly global perspective.

In modern military operations, the delivery of timely, high-quality surgical care in austere and forward environments remains a critical determinant of survivability and mission success. Iqarus has emerged as a key enabler in this domain, providing rapidly deployable, highly trained Forward Surgical Teams (FSTs) in support of NATO and European Union Training Mission (EUTM) operations.

Over the past several years, Iqarus has consistently delivered scalable medical support across

challenging operational theaters characterized by limited infrastructure, resource constraints, and evolving security dynamics. By integrating experienced surgeons, anesthetists, nurses, and pre-hospital providers with expeditionary capability, Iqarus augments existing medical frameworks and enhances operational resilience.

This model emphasizes clinical excellence, interoperability with multinational forces, and adherence to established military medical standards. Outcomes from multiple deployments demonstrate high levels of procedural success, effective damage control resuscitation, and improved casualty stabilization and evacuation readiness. Importantly, the deployment of professionally trained clinical personnel ensures continuity of care and reinforces host-nation and coalition medical capabilities.

Iqarus represents a flexible, mission-adaptable solution that bridges capability gaps in forward environments, contributing to both immediate life-saving interventions and the broader strategic objective of strengthening deployed medical systems. Its continued evolution offers a replicable framework for future multinational medical support operations.

Barriers and enablers to WHO-classified Emergency Medical Team deployment in armed conflict: a narrative literature review

SBLT Sandon Allen¹

¹ Royal Australian Navy, Ararat, Australia

Biography:

Sub-Lieutenant Sandon Allen is a third-year medical student at Deakin University with a background in paramedicine and pre-hospital care. Prior to medical school, he worked as a paramedic with Ambulance Victoria and as a Medical Sailor with the Royal Australian Navy. He holds a Bachelor of Health Science (Paramedics) from Victoria University, a Bachelor of Paramedicine with Clinical Honours and a Graduate Diploma of Advanced Paramedicine (Critical and Primary Care) from the University of Tasmania. He is completing his medical degree through the Deakin University MD Rural Training Scheme, based in Ararat, Victoria. This review, examining barriers and enablers to WHO-classified EMT deployment in armed conflict, is his first research project and was produced as part of the Deakin MD program.

Background

Armed conflict places extreme pressure on local health systems, overwhelming national capacity and requiring international support. This support is frequently provided through WHO-classified Emergency Medical Teams (EMTs), self-sufficient groups of health professionals deployed to augment local services during sudden-onset disasters and armed conflict. Since 2010, the WHO has sought to standardise and improve EMT practice through a classification system and minimum standards, codified in the Blue Book for disasters and the Red Book for armed conflict. Despite deployments in Syria, Yemen, Gaza and Ukraine, existing evidence remains fragmented across WHO reports, case studies and commentaries, with no formal review of barriers and enablers in armed conflict.

Methods

This narrative literature review searched 6,646 records, with 20 studies selected based on direct relevance to EMT deployment barriers or enablers in armed conflict settings, comprising peer-reviewed papers, WHO operational reports and policy analyses published 2010–2026. Barriers and enablers were categorised against the WHO Health System Building Blocks framework, with primary focus on service delivery, health workforce, essential medical products and technologies, and leadership and governance, the domains for which the literature was richest.

Results

Violence against healthcare workers and health infrastructure was the most consistently reported service delivery barrier. WHO documented 2,209 verified attacks on health facilities in Ukraine between 2022 and 2024, while field reports from Sudan documented facility closure rates of 70–80% among facilities serving conflict-affected populations. Restricted patient access and logistical and supply chain failure compounded these barriers, with 60–80% of trauma deaths in conflict-affected Eastern Mediterranean states occurring before hospital arrival, reflecting the collapse of ambulance and evacuation systems in environments where EMTs were operating.

Effective coordination emerged as the most significant leadership and governance enabler. The WHO EMTCC, national EMT structures and locally grounded partnerships reduced fragmentation across multiagency responses in Gaza, Mosul and Ethiopia. However, coordination was undermined when non-WHO-verified teams operated alongside classified EMTs, as in Ukraine, and when host-country leadership was absent or withdrawn.

A persistent health workforce barrier was the mismatch between WHO EMT training and the operational realities of conflict deployment. The literature identified inadequate preparedness in International Humanitarian Law (IHL), Chemical, Biological, Radiological and Nuclear (CBRN) threat response, and non-communicable disease (NCD) management as the most significant gaps. The Red Book (2021) and EMT 2030 Strategy (2023) represent important steps forward, but conflict-specific verification mechanisms and standardised deployment evaluation frameworks remain underdeveloped despite these goals.

Conclusion

This review shows that violence, access restriction and supply chain collapse are the primary barriers to conflict EMT deployment, while coordination cells, national EMT structures and local partnerships are the principal enablers. Critical gaps persist in conflict-specific training and standards verification, particularly in IHL, CBRN and NCD competencies. These findings are directly relevant to the Asia-Pacific, where EMT capability has been built for natural-hazard responses rather than armed conflict, and where Australia's 2023 Defence Strategic Review identifies increasing strategic competition. Strengthening conflict-ready EMT capacity in this region is an emerging research and policy priority.

Barriers and facilitators to support for Australian Defence Force families during military-to-civilian transition: Recommendations for practice and service delivery

Ms Amber B. Cohen^{1,2}, Ms Angeli Tabinga^{1,2},
Dr Mark Westby¹, Dr Emina Prguda^{1,2},
Dr Laura G. Carrascosa¹, Emeritus Professor
Justin Kenardy^{1,2}, Prof Nicola T. Fear^{1,3},
Dr Camila Guindalini¹, A/Prof Miranda Van Hooff¹

¹ Gallipoli Medical Research, Brisbane, Australia

² The University of Queensland, Brisbane, Australia

³ King's College London, London, United Kingdom

Biography:

A/Prof Miranda Van Hooff is Manager of Research Engagement and Development at Gallipoli Medical Research and Adjunct Associate Professor at the University of Adelaide. With over 25 years' experience in trauma and military population health,

she is a leading epidemiologist whose research has significantly advanced Australia's understanding of veteran mental health. She led the \$4.9 million Transition and Wellbeing Research Programme, which provided foundational evidence underpinning current Australian Defence Force (ADF) and Department of Veterans' Affairs (DVA) mental health strategies.

Her expertise spans military mental health, wellbeing, family functioning, and the long-term impacts of military service. She has published extensively on veteran and first responder families, including intergenerational impacts and risk and protective factors for mental health and suicide. She also leads strategic research engagement with Invictus Australia including authorship of a national report examining the role of sport, exercise, and physical activity in military-to-civilian transition and veteran wellbeing.

As Chair of the South Australian Veterans Advisory Council and former member of the Royal Commission into Defence and Veteran Suicide advisory group, she ensures strong policy relevance. Having secured over \$16.5 million in research funding and supervised 21 HDR completions, she brings outstanding expertise in research design, psychometrics, and translation.

Background

Emerging evidence suggests that military-to-civilian transition is a complex period of practical and psychosocial adaptation for the entire family unit, not solely the veteran. However, holistic and meaningful inclusion of families in transition support remains limited, and it is unclear how supports should be designed and delivered to maximise sustained engagement for both veterans and family members. This research aims to identify key recommendations to improve support for transitioning Australian Defence Force (ADF) families, by exploring barriers and facilitators to veteran and family member engagement.

Method

A series of semi-structured qualitative workshops were conducted with five ex-serving ADF veterans (Mdn age = 48 years, IQR = 6), 13 family members of serving and ex-serving ADF veterans (four parents [Mdn age = 56 years, IQR = 5], nine partners or ex-partners [Mdn age = 51 years, IQR = 9]), and 17 professionals working with ADF families in the community (Mdn age = 42 years, IQR = 8). Veteran participants had transitioned a median of 4 years ago (IQR = 2), most commonly for medical reasons (60%), and had a median service length of 26.5 years (IQR = 6.5) across the Navy (n=3) and/or Air Force (n=3). 15% of family members had a serving veteran approaching transition, while 85% had an ex-serving

veteran who transitioned within the last 10 years. Participants engaged in gamified activities and group discussions, which were analysed using abductive thematic analysis.

Results

Veteran and family member engagement with support during military-to-civilian transition was shaped by five core elements: inclusivity, attitudinal change, trust, agency, and relevance. Inclusivity of support was a key barrier, influenced by veteran-centric service models that systemically exclude family members; lack of service availability and accessibility; and inequitable, fragmented service pathways resulting in inconsistent support. Participants described how stoicism and stigmatising narratives of becoming a civilian could undermine engagement with support for the entire family unit, and advocated for strengths-based support that promotes a positive outlook towards civilian life and help-seeking. Trust was described as imperative for initial and sustained engagement with support, undermined by hidden institutional agendas and enhanced by positive reputation, credibility of information, protection of privacy, and integration of peer lived experience. The bureaucratic processes involved in military-to-civilian transition and accessing associated supports was perceived to undermine families' sense of agency, leaving them overwhelmed and disengaged despite a clear desire for support that empowers autonomy over their own transition journey. Given the overwhelming nature of military-to-civilian transition for many families, supports were seen as inherently more engaging when the relevance was clear, through culturally appropriate language, emphasis on the unique value offered to families, and support tailored to both the individual and their family circumstances.

Conclusion

Findings suggest that military-to-civilian transition is experienced by families too and offer rich insight into factors potentially undermining or facilitating veteran and family member engagement with support. This research highlights key opportunities for improving the design and delivery of transition support. Family members should be actively and meaningfully included in service eligibility, resource content and advertising efforts alongside veterans, where appropriate. Supports should be delivered flexibly and transparently to enhance accessibility, trust and tailored care, while ensuring veterans and family members retain control over if, how, and when they engage with such support. Shifting towards a strengths-based approach while addressing transition-related stressors was a key facilitator

to family engagement. To promote resilience and long-term wellbeing, it is essential for practitioners, industry, and governments to shift from reactive, rigid service provision to proactive, strengths-based, and family-centred models of care.

Civilian Contractors in Air Medical Evacuation: Sustained Exposure to High-Acuity Trauma in Conflict Environments

Professor Mansoor Khan¹, Mr Jonathan Kendrew

¹ Iqarus Gulf Fz Llc, United Arab Emirates

Biography:

Professor Mansoor Khan is a trauma and humanitarian conflict surgeon whose career spans frontline medicine, executive leadership, entrepreneurship, and investment. His work uniquely bridges the high-stakes precision of the operating theatre with the strategic demands of global organisations, reflecting a rare ability to lead across both clinical and corporate arenas.

Internationally recognised in the surgical field, Professor Khan has extensive experience in trauma care, complex surgical environments, and austere humanitarian settings. He currently serves as Regional Medical Director at Iqarus, where he provides clinical leadership and operational oversight across diverse regions. In this role, he is responsible for ensuring the delivery of high-quality medical services in challenging environments, guiding multidisciplinary teams, shaping clinical governance frameworks, and aligning medical operations with broader organisational strategy.

His career is defined by adaptability, disciplined execution, and a deep commitment to impact. Whether advancing surgical care in high-risk settings, leading regional medical operations, advising ventures, or investing in innovative projects, he brings a consistent philosophy: innovation grounded in experience, empathy informed by service, and an uncompromising pursuit of excellence.

His work is marked by measurable outcomes and transformative influence, establishing him as a trusted leader and multidisciplinary professional with a truly global perspective.

Civilian medical contractors are increasingly embedded within Air Medical Evacuation Teams (AMETs) operating in conflict-affected environments, yet their clinical exposure and contribution to

operational medicine remain underrepresented in the literature. This study describes the case mix, operational tempo and clinical burden experienced by a civilian contractor over a 31-month deployment.

A prospective operational registry was analysed from July 2023 to February 2026, capturing patient encounters, mission characteristics, injury patterns and outcomes. Over 860 aeromedical callouts, 3,255 patients were managed, equating to a sustained tempo of approximately one mission per day and a mean of 3.8 patients per sortie.

Trauma accounted for 84% of cases, with gunshot wounds (n=1,276) and improvised explosive device-related injuries (n=489) representing the predominant mechanisms. Medical presentations comprised 16% of the caseload. The majority of patients (69%) were classified as wounded in action. Despite the high-acuity environment and frequent multi-casualty missions, in-flight mortality remained low at <1% (n=5).

These findings demonstrate that civilian contractors within AMET systems operate in a high-intensity clinical environment characterised by sustained exposure to penetrating and blast trauma comparable to military aeromedical evacuation platforms. This exposure provides a unique opportunity for maintaining trauma proficiency and operational readiness, potentially mitigating skill degradation during periods of low operational tempo.

Recognition of civilian contractor roles is essential for informing clinical governance, training frameworks and workforce planning within modern conflict medicine. Structured integration between military and contractor systems may offer a viable mechanism to preserve trauma competence in an evolving operational landscape.

Closing the Forward Oxygen Gap: Rugged Oxygen Generation for Contested and Austere Care

Mr Alexander Charlesworth¹

¹ Owen International Pty Ltd, Artarmon, Australia

Biography:

Alex Charlesworth is the Program Director at Owen International Pty Ltd with over 20 years of experience supporting Defence and maritime capability programs. He holds a Bachelor of Science (Honours) in Chemistry with Pharmaceutical Chemistry and has built a career spanning program management, engineering support, sustainment, business development and contract management across the Australian Defence sector.

Alex specialises in delivering complex Defence projects involving naval communications, control systems, diving and life-support equipment, and through-life support solutions. He works closely with Defence stakeholders, prime contractors and international OEMs to develop sovereign Australian capability, manage strategic partnerships and deliver critical operational outcomes.

Known for his practical leadership style, technical understanding and strong stakeholder relationships, Alex is passionate about developing teams, supporting Defence capability and strengthening Australia's industrial and sustainment base.

Background

Oxygen has long been treated as a platform and facility resource, positioned in evacuation assets, Role 1 and higher. Large-scale combat operations, contested airspace and evacuation timelines, now measured in hours rather than minutes – and the shift to prolonged field care doctrine – means this stance is no longer practical.

Evolving clinical guidance now reinforces the shift. Updated Tactical Combat Casualty Care direction now treats oxygen saturation below 92% as a trigger for respiratory intervention at the point of injury, with supplemental oxygen directed for traumatic brain injury wherever available. The requirement to oxygenate has moved forward, but the means to do so safely has not followed.

The capability gap

The need to oxygenate early is shared across each operating environment, but what differs is how each makes traditional compressed oxygen unworkable.

At sea, compressed-gas fragmentation and fire risks are unacceptable in a submarine's enclosed compartments. And logistics chains for refill are absent or difficult on extended deployments.

In the air, aeromedical platforms face weight, pressurisation and stowage constraints while contested airspace delays the evacuation that oxygen logistics assume.

On land, cylinders are not deployed for dismounted and point of injury care because of blast hazards. And portable oxygen concentrators fail without continuous power under heat, dust and altitude demand.

In first response, firefighters, search and rescue teams and remote ambulance services encounter oxygen depleted, power denied or hazmat conditions, where the same constraints apply.

Across all four, hypoxia - shown to triple mortality in traumatic brain injury during the prehospital phase - advances during the window when intervention matters most.

A single solution for all environments

The Rugged Oxygen Generator (ROG) addresses this shared gap through solid state chemical oxygen generation. Producing >96% medical grade oxygen at >6 L/min for 15 minutes. It requires no power, is non-pressurised and non-explosive. The chemistry is not novel to deployment, it derives from Molecular Products' in-service heritage, including the MilSpec MPOG oxygen generator deployed today on Australia's submarines.

Areas of use

ROG supports oxygenation at the point of injury and during transfer of ventilated patients. Validated with the Zoll Impact 731, the ROG enables oxygen to move with the patient, back from the front. Because it is non-pressurised, ROG is deliverable by uncrewed aircraft; a recent proof flight delivered a ROG payload beyond 1,000 m using a seven-inch FPV drone, restoring last mile access across contested ground. Offering a demand driven resupply method where conventional movement is interdicted.

Evidence and readiness

ROG has completed MIL-STD-810G/H qualification including vibration, thermal extremes, humidity, altitude, drop and shock. It is FDA 510 (k) cleared and UN3356 certified. For Indo-Pacific and allied forces defined by maritime separation and constrained lift, this presentation will look at how one capability closes the forward oxygen gap across Defence and civilian settings.

Combat Tourniquets and the Prevention of Iatrogenic Limb Ischaemia in Modern Warfare

Dr Patrick Weinrauch^{1,2}

¹ Australian Army, Brisbane, Australia.

² Counter Terrorism and Operational Medicine, Central Queensland University, Rockhampton, Australia

Biography:

Orthopaedic Surgeon

Medical support for anticipated Australian Defence Force operations requires the capability to deliver extended duration austere healthcare in response to the constraints of contested mobility, long evacuation distances, resource limitations and

tactical requirement. Combat tourniquet application in Prolonged Casualty Care represents a challenge at all levels of healthcare provision and tactical command. Contemporary evidence based guidance for clinical decision making and organisational preparedness in the management of combat tourniquets in modern warfare is presented.

Combination Topical Anaesthesia, Antisepsis, and Haemostasis for Battle Wounds—Initial Human Trial of an Established Australian Veterinary Formulation, Used on Major Wounds to Deliver Rapid and Prolonged Pain Relief.

Dr Meredith Sheil¹, LT COL Professor Steven Jeffery¹

¹ Medi-Solven Pty Ltd, Melbourne, Australia

Biography:

Dr Sheil MBBS FRACP PHD, is bringing expertise in innovative wound anaesthesia to patients with wounds in high-stress environments such as military and emergency care settings. Dr Sheil has background expertise in paediatric cardiology and managing children undergoing open heart surgery, holding a PhD from Sydney University. She is also a sheep farmer, ARC linkage grant recipient, and former honorary lecturer in veterinary medicine at Sydney University. In 2008, as a founding director of Animal Ethics Pty Ltd, Dr. Sheil developed a pioneering topical anaesthetic formulation for direct, in-field use on major open wounds in livestock. The formulation, now used globally on ~10 million animals each year, combines topical anaesthetic, antiseptic and haemostatic agents in a viscous fluid base, able to be sprayed or instilled onto wounds and persist, to provide rapid onset numbing (sufficient to enable cleaning and debriding) as well as long-acting pain relief. This was to meet an urgent need for pain mitigation in infant livestock with major open wounds, such as seen following husbandry procedures including tail amputation, skin degloving (Mules procedure), castration, burn and amputation dehorning. Using this experience, she is now advancing topical anaesthetic pain management solutions for humans with analogous serious wounds.

Introduction

Topical anaesthetic products suitable for application in war zones, disaster situations, retrieval, or emergency care, are critically needed, to treat wounds, including traumatic, blast and / or burn,

and deliver prompt and sustained pain relief. In military contexts, this is needed to reduce reliance on opioids which may impair combat performance, self-preservation, and extraction capabilities. Ideally, products should also promote haemostasis, provide antisepsis, and enable pain-free wound care such as cleaning, debriding, or suturing. A topical wound anaesthetic formulation of this type (Tri-Solfen®) is well established in veterinary medicine, but has not previously been evaluated for human application. An Australian innovation, designed for use on complex livestock wounds, it combines lignocaine 5%, bupivacaine 0.5%, adrenaline (1:40,000), and cetrimide 0.5% in a biocompatible viscous fluid base that can be sprayed or instilled directly onto wounds and persist in-situ for prolonged effect. First approved in 2008, it is now extensively used for pain management in up to 10 million animals annually, with open wounds from procedures such as tail or horn amputation, castration, skin degloving (Mules procedure), or on diffuse infective ulcerative lesions. Ease of application enables rapid treatment of multiple animals, even in remote field conditions. Robust animal data confirm safety (including in doses exceeding 1ml/kg), and efficacy, with local anaesthesia onset within a minute and sensory analgesia persisting from 4 to over 24 hours, depending on wound type and species. To assess its suitability for battlefield applications, Medi-Solfen®, a GMP-compliant human formulation, has been prepared to progress to phase II clinical trials in Ukraine.

Objectives

A 2-part phase Ib/Ila ICH clinical trial to examine safety, efficacy and optimal dwell time of Medi-Solfen®, when applied to traumatic lacerations requiring suture repair.

Methods

Part 1 open label trial, including 24 adults presenting with lacerations (up to 16cm²) needing suture repair, sequentially assigned to 4 cohorts (6 patients each). Product was applied without occlusive cover allowing 15 minutes dwell-time prior to suture (Cohort 1) or with occlusive cover and allowing 5-, 10-, or 15- minutes dwell-time prior to suture in Cohorts 2 – 4 respectively. Safety parameters included systemic and local tolerability, wound healing and pharmacokinetics. Efficacy was evaluated by NRS response to needlestick (wound anaesthesia), VAS pain scores (pain relief), and rescue analgesia use. Wound bioburden was measured with quantitative swabbing.

Results

Patients with wound size range 1-6cm length, and 0.5-0.9cm width, received mean±SD Medi-Solfen® dose of 0.9±0.6ml (range 0.2-2.6ml). No clinically significant product-related adverse effects were observed in monitored safety parameters. Maximum plasma concentrations of bupivacaine and lidocaine (<0.004±.001 ug/ml), remained well below toxic thresholds. Baseline NRS scores (≥5/12) decreased significantly to ≤1/12 in all cohorts following treatment dwell time, p<0.012. Only one patient (Cohort 1), needed rescue analgesia during suturing. Baseline VAS scores (31.2±9.2 on a 100mm scale) dropped significantly to 5.0±6.7, 1.7±3.9, and 0.8±2.9 at 5, 10, and 15 minutes post-application (p≤0.007). During suture repair, mean VAS scores ranged from 0.0 in Cohort 4 (p<0.007) to 16.7±26.6 in Cohort 1 (p<0.04). Post-operatively, mean VAS scores remained below 1.7±8.2 from 1 to 24 hours. No participants required postoperative rescue analgesia. Bacterial growth was found in 6 of 24 patients before- but in none after- treatment.

Conclusions

Innovative use of topical anaesthesia may enable improved wound pain management on the battlefield, helping to prevent complications linked to opioid use. When applied to traumatic lacerations, Medi-Solfen® proved safe and effective, to provide rapid wound anaesthesia (sufficient for suture repair), extended pain relief, and lowered bioburden. These results align closely with preclinical animal studies involving significant open wounds and underscore the importance of further trials and development for battlefield use.

Connecting Data, Improving Care: Harnessing Organisational Intelligence Through Quality Management Systems

Ms Kayla Vella¹, Mrs Kimberly Steed¹

¹ Serco Aspac, Australia

Biography:

Kayla Vella is a Quality & Governance Coordinator with Serco AsPac, supporting the Australian Defence Force Health Services Contract. She works across clinical governance, quality management and organisational reporting, helping transform data into meaningful insights that support patient safety and continuous improvement. With experience across both government and healthcare sectors, Kayla has

developed expertise in quality management systems, clinical governance, risk management, data analysis and stakeholder engagement. She is passionate about using organisational intelligence to move beyond compliance reporting, enabling informed decision-making and system-wide quality improvement. Kayla is an ISO 9001:2015 Lead Auditor and has contributed to the development of governance reporting, quality management processes and continuous improvement initiatives that strengthen organisational resilience and improve health outcomes.

Health organisations can oversee multiple health sites, with each site contributing data that forms a central organisational view of quality and safety. Individually each health site collects large amounts of information every day through incidents, complaints, risks, audits and quality improvement activities, this information provides valuable insight into the performance of a single service. When data is then combined across an organisation with multiple services, it provides a much broader understanding of the organisation's performance, trends, risks and opportunities for improvement. Actively using this health data can drive meaningful change and improve overall patient outcomes.

When data is considered in isolation, opportunities to identify broader patterns and trends, emerging risks, and system gaps can be missed. This can result in repeated incidents, delayed recognition of safety issues, inconsistent responses across services, ongoing reactive management and missed opportunities for organisational learning. In contrast, using organisational data in a connected, central way enables overarching oversight, allowing organisations to identify trends earlier, prioritise improvement efforts, and implement system wide changes that strengthen patient safety, improve care quality, and enhance patient outcomes.

Quality Management Systems provide a centralised hub for collecting, analysing, and acting on quality and safety data, supporting evidence-based decision making and system wide improvement. It assists in connecting the data between multiple health sites and displays the overarching view of the organisation. However, these systems are often underutilised and can be viewed primarily as a compliance requirement or used as a data repository, rather than a strategic tool for decision making and improvement. Health organisations often already have the data needed to identify opportunities for improvement. The challenge is turning this data into organisational intelligence that drives action.

This poster explores how organisational data can be better used to support informed decision making and

drive continuous improvement. It will demonstrate how connecting data allows individual events to be seen in context, reveals patterns, recurring issues and system wide risks that provide us with intelligence to inform decision making and drive continuous improvement. A Quality Management System supports this by bringing these data sources together and enabling them to be analysed and interpreted as a whole.

Having an organisational view of data enables leaders to determine if issues are isolated or occurring broadly across health sites, understand contributing factors, and implement coordinated improvements across sites, reducing variability in care. It also supports organisational learning by sharing improvement activities that could be utilised across sites, rather than each health site addressing similar issues in isolation. It enables improvement efforts to be prioritised where they will have the greatest organisational impact, leading to more consistent care and improved patient safety.

The information required to improve patient safety often already exists within health care organisations. The opportunity lies in bringing that information together and using it to inform decisions, rather than managing trends in isolation at individual health sites. By connecting information across multiple health sites, a Quality Management System transforms individual data points into meaningful organisational intelligence. This enables organisations to identify emerging risks and trends, implement targeted quality improvement initiatives, and take a proactive rather than reactive approach to quality and safety. Ultimately, using data in this way enables a consistent approach to care across services, strengthens organisational learning, supports continuous improvement, and contributes to safer care and better patient outcomes.

Drivers, Challenges, and Maturity: The Evolution of Quality Management in the ADF Health System – A Qualitative Systematic Review

Dr Monica Ding¹, Dr Andrik Lohman, Mr Grant Vickery

1 ADF, Brisbane, Australia

Biography:

Dr Ding has been a registered clinician since 2009, with extensive experience in research methodology,

academic education, and health systems analysis. Within the Australian Defence Force (ADF), her work focuses on quality improvement and clinical governance, with a particular emphasis on psychological safety, data quality, and system-level learning. She adopts a collaborative, multidisciplinary approach, integrating clinical, administrative, and command perspectives to support efficient, safe, and evidence-based care for ADF members.

Dr Lohman is a practising senior clinical consultant within Joint Health Unit South Queensland (JHU SQ EHC) and has over 20 years' experience working within the Australian Defence Force. He brings substantial expertise in longitudinal and continuous care within military health settings and has contributed to the development and implementation of clinical governance and quality-improvement initiatives. His experience spans operational, primary care, and organisational contexts, supporting consistent, accountable, and clinically safe care delivery.

Mr Grant Vickery is a Pathology Manager and Medical Laboratory Scientist focuses on ensuring the accuracy, safety, and reliability of pathology services within the healthcare system, with particular emphasis on quality assurance, regulatory compliance, and risk management. He contributes specialist expertise to supporting clinically informed decision-making.

Quality management is not a novel concept in healthcare. Its philosophical roots can be traced to the Tao Te Ching in the sixth century BCE, where Lao Tzu observed that quality, when narrowly defined, risks losing its enduring essence. Across history, healthcare quality has evolved through pivotal transitions driven by individuals, crises, scientific discovery, and organisational reform. From Florence Nightingale's systematic analysis of wartime outcomes to public health leadership during global pandemics, these tipping points laid the foundations for modern quality improvement and governance.

Technological and organisational innovations further transformed healthcare quality, including sterilisation, diagnostic imaging, cardiopulmonary resuscitation, and simulation based education. System level reforms—such as the Flexner Report, vaccine development, and national healthcare financing models—created the structural conditions necessary for formal quality management systems. By the mid twentieth century, these developments converged into recognisable quality frameworks, often described through “tipping point” theory, where alignment of leadership, culture, and evidence accelerates system change.

In Australia, structured quality management gained momentum from the 1970s through accreditation

initiatives and national safety reforms, culminating in contemporary clinical governance frameworks. In contrast, the Australian Defence Force (ADF) health system adopted formalised quality management later and within a unique operational and command driven environment. While professional standards existed earlier, structured quality and safety systems emerged in the mid 1990s and were consolidated through the ADF Clinical Governance Framework in the early 2000s, aligning Defence health services with national expectations while maintaining readiness and deployability.

This qualitative systematic review examined how quality management has evolved within the ADF health system and assessed the extent to which existing literature supports contemporary, evidence based quality governance. A total of 57 records were identified through database searching. After removal of duplicates and exclusion of two studies due to unavailable full text access, 55 records proceeded to screening. Title, abstract, and full text review resulted in the exclusion of 54 publications, leaving only one study eligible for inclusion.

The predominant reason for exclusion was lack of relevance to the ADF context. The overwhelming majority of publications focused on the United States Military Health System or other non Australian military organisations, including the UK Defence Medical Services, the French military health system, the Nigerian Armed Forces, or mixed civilian–military health systems in China. Although these studies provided valuable international insights, substantial differences in governance structures, funding models, population characteristics, and operational environments limited their applicability to the ADF.

A large proportion of excluded studies examined clinical or specialty specific issues rather than system level quality governance. These included analyses of trauma care, maternal morbidity, immunisation programs, mental health screening, surgical quality improvement, and other intervention focused initiatives. While demonstrating effective localised improvements, these studies lacked organisational governance perspectives necessary to inform ADF wide quality management. Notably, no identified publications examined system level quality governance within the Australian Navy or Air Force, highlighting an additional tri service evidence gap.

Ultimately, only one publication—Reade's assessment of trauma system quality priorities—was retained. Importantly, this work is itself a secondary synthesis undertaken because of insufficient primary studies, reinforcing the central finding of this review.

This study demonstrates a profound and persistent

gap in published research examining ADF health system quality governance. Its primary contribution lies in clearly identifying this absence of evidence and the need for targeted, ADF specific research to inform governance, performance measurement, and strategic quality improvement reform. Strengthening this evidence base is essential for the ADF health system to mature as a modern, high reliability organisation delivering safe, effective, and operationally ready care.

Establishing a Shore Based Psychological Resilience Training Program for Australia's Future Nuclear Submarine Crew: A Three Phase Study

Dr Monica Ding¹, SBLT Jiugao Wang

¹ ADF, Australia

Biography:

Dr. Ding and SBLT Wang are deeply committed to enhancing members' wellbeing through consistent, high-quality, and ongoing support. Guided by a shared passion for research and innovation, they work collaboratively to design and implement structured, evidence-based interventions. Their approach integrates research, practice, and continuous evaluation to promote sustainable wellbeing, informed decision-making, and positive outcomes for individuals and the broader community.

Background

The submarine environment presents unique and sustained psychological stressors, including prolonged confinement, lack of sunlight, chronic sleep disruption, high operational demands, social isolation, and separation from family and support systems. Within the Australian submarine force, approximately 33% of submariners are discharged for psychological reasons before completing their first enlistment, equating to more than 350 personnel annually. As Australia transitions toward nuclear powered submarines with longer and more demanding patrols, proactive, evidence based psychological resilience training is required to improve mental health, retention, and operational readiness.

Aim

This study aims to establish the feasibility, design, and preliminary effectiveness of a shore based psychological resilience training program tailored to

Australian Navy submariners, using Acceptance and Commitment Therapy (ACT) principles to enhance psychological flexibility and resilience prior to first operational deployment.

Study Design

A three phase translational study was conducted.

Phase I: Feasibility and Evidence Review

Design: Systematic literature review and feasibility assessment

Objectives

1. Examine psychological risks associated with extended submarine missions, including mental health outcomes, retention, and occupational functioning.
2. Review existing interventions used in military, submarine, spaceflight, and high reliability isolated environments.
3. Assess feasibility of shore based psychological resilience training within Australian Navy operational constraints.

Key Findings

- Psychological distress, depression, anxiety, and sleep disruption are prevalent in submarine populations.
- Psychological flexibility based interventions (e.g., ACT) demonstrate effectiveness in military and high stress occupations.
- Shore based delivery prior to first deployment is logistically feasible and acceptable.

Phase II: Program Development and Adaptation

Design: Intervention design and manualisation

Intervention

A 4 hour, shore based ACT informed psychological resilience training program developed specifically for Australian submariners preparing for their first submarine tour.

Core Components

- Understanding stress and performance under confinement
- Psychological flexibility skills (acceptance, cognitive defusion, values based action)
- Managing isolation, sleep deprivation, and interpersonal strain
- Brief experiential exercises tailored to submarine operational realities

Delivery

Group based sessions delivered during pre deployment training, facilitated by Defence mental health professionals.

Phase III: Pilot Effectiveness Evaluation

Design: Pre post single group evaluation

Participants

Submariners scheduled for their first operational deployment

Outcome Measures

Collected immediately pre training and post training:

- Psychological flexibility (e.g., AAQ II)
- Psychological resilience (e.g., Brief Resilience Scale)
- Psychological distress (e.g., DASS 21)
- Training acceptability and perceived usefulness

Expected Outcomes

It is hypothesised that participants will demonstrate:

- Increased psychological flexibility
- Improved resilience scores
- Reduced psychological distress
- High acceptability and relevance ratings

Timeline

Phase Duration

Phase I – Review & Feasibility 3 months

Phase II – Program Design 2 months

Phase III – Pilot Delivery & Evaluation 3 months

Total Duration 8 months

Conclusion

This three phase study supports the feasibility and preliminary effectiveness of a brief, shore based ACT resilience training program for Australian submariners. Early intervention prior to first deployment may mitigate psychological risk, enhance resilience, and potentially reduce attrition. Findings will inform larger controlled trials and integration into future nuclear submarine workforce preparation.

Evolving Regulatory Expectations in General Practice: A National Environmental Scan and Governance Impact Assessment

Ms Liz Dalla Santa^{1,2}, [Dr Jen Coleman](#)¹,
Dr Ayesha Floyd-Smith¹

¹ Bupa, Australia

² Monash University, Monas Medicine, Nursing and Health Sciences, Melbourne, Australia

Biography:

Dr Jen Coleman, BAppChem(Hons), MBBS, FRACGP, MSportsMed, is the Senior Medical Advisor with Bupa ADF Health Services, working within the Clinical Governance Team supporting healthcare delivery to the Australian Defence Force. With over 15 years' clinical experience spanning rural and remote generalism, emergency medicine, sports medicine and occupational health, she has held senior roles including Director of Medical Services across six HNELHD hospital sites and Chair of the Medical Staff Council at Maitland Hospital. She is Deputy Chief Medical Officer for the Australian Formula 1 Grand Prix.

Background

Australia's general practice workforce is undergoing significant regulatory and structural transformation, driven by workforce shortages, evolving models of care, and diversification of entry pathways. The contracted Defence health system maintains strong clinical governance requirements, with standards above that of civilian run sectors. Contracted clinicians must hold full and unconditional registration status to meet credentialing requirement and safeguard member experience and high-quality care. Since 2020, general practitioners have been required to hold Specialist Registration with Ahpra, creating a cohort of practitioners practising with specialist registration only as transitional arrangements evolved. This shift is accelerating with the introduction of the Expedited Specialist Pathway (October 2024), enabling eligible international medical graduates (IMGs) to obtain specialist registration in general practice independently of specialty colleges.

Concurrently, increasing regulatory focus on professional conduct, including heightened visibility of sexual misconduct tribunal findings, is reinforcing expectations regarding professional boundaries, cultural safety, and early intervention.

Aim

To undertake a national environmental scan of emerging regulatory requirements impacting the general practice workforce, and to assess their implications for clinical governance across the contracted Defence national health workforce.

Methods

An environmental scan involved structured analysis of Ahpra and Medical Board requirements, including reforms to registration pathways, supervision requirements, and eligibility criteria for IMGs. Differences between pathways leading to general registration and specialist-only registration were examined, including the implications of conditional registration without explicit scope-of-practice limitation. Processes for publication of tribunal decisions relating to sexual misconduct were reviewed.

The impact assessment mapped regulatory developments against governance systems for on-base Contracted Health Professionals and off-base Service Providers. Impacts were assessed across credentialing, and professional conduct systems, with consideration of compliance risk, operational implications, workforce sustainability, and access to care.

Results

The environmental scan identified increasing complexity and heterogeneity in general practice entry pathways, including the emergence of specialist-only registration routes that may not require traditional college-led assessment. These pathways introduce variability in training, supervision, and standardisation of capability across the workforce. Regulatory expectations are also strengthening in relation to professional conduct, with tribunal findings reinforcing expectations for early identification and escalation of boundary violations.

The impact assessment demonstrated key governance risks, including: Ahpra regulatory changes will have ongoing downstream impacts for the Defence contracted workforce including increased administrative burden and risks to continuity of care for members.

Daily Ahpra PIE monitoring identified an increasing frequency of conditions applied to practitioners, particularly relating to supervision requirements and mandated education. These conditions create important safeguards, yet have a material operational impact, such as constrained workforce flexibility, and downstream effects on access to and continuity of care, particularly in high-demand general practice settings.

Discussion

The convergence of workforce reform and increasing regulatory scrutiny highlights the limitations of static compliance models. Specialist-only pathways, evolving entry requirements, and increased use of regulatory conditions challenge traditional pathways to practice. Health systems must transition to dynamic, intelligence-driven governance models capable of integrating real-time regulatory signals and responding consistently at scale.

Conclusion

A structured environmental scan combined and impact assessment, suggests that a dynamic governance system is required to maintain alignment with an evolving regulatory landscape. Current systems such as robust credentialing and daily regulatory surveillance such as Ahpra PIE monitoring, provide strong controls and protecting quality of care. Building a continuously improving governance capability is critical to ensuring safe integration of a diversifying general practice workforce, mitigating organisational risk, and preserving access to care within the national contracted Defence health system.

From NAMRU-2 to Future Regional Laboratories: Military Medicine, Health Diplomacy, and Pandemic Preparedness in the Asia-Pacific

Mrs Alfiah Noor¹

1 Aspen Medical, Indonesia

Biography:

Alfiah Noor is a biomedical scientist and healthcare operations professional from Indonesia with more than 20 years of combined experience in medical research, healthcare management, and digital health innovation. She earned her Bachelor of Science in Biology from Institut Teknologi Bandung and her Master of Science in Biomedical Science, with a focus on Cell and Gene Therapy, from Vrije Universiteit Brussel, Belgium.

Her early career included work at U.S. NAMRU-2 Jakarta, where she contributed to influenza surveillance and virology research, and at the Stem Cell and Cancer Institute, Kalbe Farma, where she played a key role in establishing ReGenic Lab for autologous stem cell therapy. She later joined Vrije Universiteit Brussel as a researcher in oncology and molecular medicine, contributing to peer-reviewed publications on cancer biology, nanobody technology, and targeted therapies.

She is currently Operations Manager at Aspen Medical Indonesia, a subsidiary of Aspen Medical Pty Ltd Australia, where she manages hospital commissioning, feasibility studies, and strategic healthcare projects.

Her professional focus lies in bridging scientific research and healthcare delivery, with special interests in oncology, stem cell therapy, virology, precision medicine, and delivering equitable healthcare in Indonesia.

Military medicine is often associated with battlefield care, but its role extends far beyond the treatment of soldiers during conflict. It also can contribute to health diplomacy, infectious disease surveillance, international research collaboration, and pandemic preparedness. A significant example is the U.S. Naval Medical Research Unit Two (NAMRU-2), which operated in Jakarta from 1970 to 2009. During its presence in Indonesia, NAMRU-2 conducted research on malaria, dengue, influenza, HIV/AIDS, and other infectious diseases, while supporting surveillance networks across Southeast Asia (Brachman, 2001). The Jakarta laboratory included bacteriology, virology, parasitology, entomology, and emerging infectious disease components, with capacity ranging from classical microbiology to molecular biology approaches, including BSL-2 and near-complete BSL-3 capability (Brachman, 2001). However, its eventual closure following political concerns and questions of trust illustrates both the potential and the challenges of international military medical research (Smith, 2014).

This abstract examines NAMRU-2 as a case study through three dimensions: geopolitics, interoperability, and resilience. First, NAMRU-2 functioned as a form of health diplomacy between the United States and Indonesia, demonstrating how military medicine can support international cooperation. Second, it contributed to interoperability by training local scientists, standardizing research protocols, and enabling data-sharing with civilian and regional partners. Third, its surveillance networks strengthened resilience by improving early detection and response capacity for infectious disease threats.

At the same time, the NAMRU-2 experience demonstrates that technical capability alone is not sufficient. International military medical laboratories require transparency, shared ownership, clear legal frameworks, civilian participation, and regional compatibility of standards and protocols. Without these elements, research partnerships may face distrust, political resistance, and questions about sovereignty, data ownership, and biosecurity.

These lessons are especially relevant for future pandemic preparedness in the Asia-Pacific. Transparent and balanced international laboratories can support early pathogen detection, rapid data-sharing, and coordinated cross-border responses. When integrated with civilian health systems, military medicine adds value through logistics, rapid deployment capacity, laboratory expertise, and operational discipline (Thomas et al., 2023).

Indonesia–Australia cooperation offers a promising contemporary model. Existing collaboration through health security partnerships, infectious disease research, and defense cooperation provides a more balanced framework that emphasizes shared ownership, civilian involvement, and bilateral trust (Australian Government Department of Foreign Affairs and Trade, 2020). By applying lessons from NAMRU-2 to current Indonesia–Australia cooperation, future regional laboratories can be designed to support both military medical readiness and global health security.

In conclusion, NAMRU-2 provides an important case study for understanding the opportunities and risks of international military medical research. Its history shows that such laboratories can strengthen geopolitics, interoperability, and resilience, particularly in pandemic preparedness. However, future initiatives must prioritize transparency, equitable governance, civilian participation, and regional trust. These principles are essential for building international research laboratories that are scientifically effective, politically sustainable, and responsive to future health security threats.

References

- Australian Government Department of Foreign Affairs and Trade. (2020). Australia Indonesia Health Security Partnership Design Document.
- Smith, F. L., III (2014). Advancing science diplomacy: Indonesia and the U.S. Naval Medical Research Unit. Science & Diplomacy.
- Brachman, P. S., O'Maonaigh, H. C., & Miller, R. N. (Eds.). (2001). Perspectives on the Department of Defense Global Emerging Infections Surveillance and Response System: A Program Review. National Academies Press.
- Thomas, R. J., Krah, P. L., Mallon, T. M., & Gaydos, J. C. (2023). Preparedness of military public health for epidemic and pandemic recognition and response. Military Medicine.

LEAP into Leadership: A unified framework and toolkit for Australia's Integrated Defence Health System

Ms Liz Dalla Santa^{1,2}, Ms Toni Arndell¹

¹ Bupa, Australia

² Monash University, Medicine, Nursing and Health Sciences, Melbourne, Australia

Biography:

Adj. A/Prof Liz Dalla Santa B.Phys, MHM, MBA, is the General Manager of Clinical Operations for Bupa's ADF Health Services, with accountability for the contracted aspects of the ADF health services clinical governance, quality and safety, and continuous improvement systems.

She is a registered physiotherapist, with 19 years of clinical and senior leadership experience across the continuum of acute to community health services in Australia. She is passionate about life long learning, delivering values-based health care and excellent member outcomes.

Background

The Australian Defence healthcare system operates within a uniquely dynamic environment, where clinical services must rapidly adapt to fluctuating operational demands, workforce mobility, and the requirement to sustain force readiness. Unlike traditional healthcare settings, Defence health services must balance routine care delivery with the ability to rapidly scale, reconfigure, and deploy services in response to operational and humanitarian demands.

This occurs within a complex, integrated workforce comprising contracted clinicians, uniformed personnel, and Australian Public Service (APS) staff, working across multiple organisations, locations, and governance structures. While this model enables flexibility and scale, it also introduces variability in leadership capability, fragmented governance, and inconsistent accountability, which can impact patient outcomes, workforce performance, and the system's ability to respond cohesively under pressure.

Clinical leadership is a foundational enabler of safe, high-quality, and continuous improvement.

Objective

To design a nationally consistent Clinical Leadership Framework and Toolkit for the to support clinical governance and patient outcomes within an integrated Defence health system.

Methods

A structured, evidence-informed approach was undertaken, including:

- Review of contemporary clinical leadership frameworks (Adaptive Leadership, NHS Healthcare Leadership Model, Collective Leadership, Clinical Microsystems)
- Consultation with Senior Contracted Clinicians and operational leaders across the integrated workforce
- Gap analysis of leadership expectations across position descriptions and credentialing processes
- Integration of the National Model for Clinical Governance 2026, systems thinking, quality improvement, and governance best practice

This ensured alignment between evidence-based leadership approaches and the operational realities of Defence healthcare.

Results

The LEAP Clinical Leadership Framework (LEAP) was developed as a clear and actionable solution to strengthening leadership capability across clinical teams. By integrating Learning, Engagement, Accountability, and Partnering with purpose, the framework aligns professional development with organisational goals and patient outcomes. LEAP fosters a culture of continuous improvement, supports high-performing and resilient teams, and enables clinicians to lead with clarity, accountability, and collaboration. As a structured yet adaptable model, it provides a unifying approach to transforming care delivery and advancing system-wide excellence.

The LEAP Framework is structured around three pillars, and supported by a targeted toolkit of evidence-based tools and methods:

1. Leadership of Self
2. Leadership of People
3. Leadership of Systems

The model is explicitly designed to support clinical governance across an integrated workforce, translating principles into observable leadership behaviours that drive safety, quality, and accountability.

By linking leadership behaviours directly to governance functions, the model strengthens clinicians' ability to coordinate across organisational boundaries, identify and escalate risk, and maintain safe, high-quality care in dynamic environments. It supports a shift from reactive, siloed decision-

making to proactive, integrated leadership across the system.

Discussion

In the Defence context, clinical leadership is a critical system capability that underpins both clinical governance and force readiness. The ability to lead effectively across a diverse, integrated workforce directly impacts patient outcomes, workforce performance, and operational capability. This framework operationalises the principles of the 2026 National Clinical Governance Framework by embedding them into everyday leadership practice, ensuring governance is not only defined at a policy level but enacted consistently across all parts of the workforce.

Conclusion

A nationally consistent Clinical Leadership Framework and Toolkit provides a scalable, practical mechanism to strengthen clinical governance, improve patient outcomes, and enhance operational effectiveness within an integrated Defence healthcare system.

Lessons from Ukraine: An International Preventive Psychological Recovery Model for Active-Duty Military Medics During Prolonged Armed Conflict

Ms Kateryna Serdiuk¹, Chase Hui²,
A/Prof Derrick Tin³

¹ Repower, Ukraine

² Canadian International School, Hong Kong

³ Serco, ASPAC

Biography:

Dr Derrick Tin is an Associate Professor of Critical Care Medicine and a US fellowed Disaster Medicine Specialist. He is the Chief Medical Officer at SERCO. His interests focuses on the healthcare impacts of intentional mass casualty events such as terrorism, conflict and war.

Background

Military medics operate under sustained exposure to death, severe injury, repeated traumatic events, and morally challenging circumstances. Unlike traditional rehabilitation services that primarily focus on veterans after military service, there remains limited discussion regarding structured preventive psychological recovery for healthcare

personnel who continue to serve in active combat environments. Maintaining the psychological health of military medical personnel is essential not only for individual wellbeing but also for preserving operational capability and healthcare system resilience during prolonged conflict. Repower, a Ukrainian non-government organisation, has developed an innovative model designed specifically to address this capability gap by providing structured psychological recovery to active-duty military medics before psychological injury becomes chronic.

Program

Repower delivers intensive 10–12 day multidisciplinary recovery programs for 25–100 active-duty military medics in international locations including Sweden, Denmark and Spain. Participants remain in active service throughout the program and are nominated through official Ukrainian defence and government agencies. The intervention integrates multiple evidence-informed components including psychological education, trauma-informed recovery practices, individual psychological consultations, peer-support and facilitated reflection groups, neuroplasticity and stress-regulation exercises, mindfulness, cultural and nature-based recovery experiences, professional exchange with international healthcare colleagues, and engagement with governmental and civil society partners to reinforce professional identity, purpose and recognition. Rather than relying on a single therapeutic intervention, the program aims to regulate the nervous system, restore resilience, strengthen peer relationships, and facilitate sustainable return to operational duties.

Results

Since December 2022, Repower has delivered 25 international recovery programs involving more than 2,000 military medics and healthcare professionals while also supporting frontline medical capability through humanitarian assistance. Independent psychological assessments have demonstrated encouraging improvements following participation, including a greater than 54% reduction in PTSD symptom severity, a 35.7% reduction in anxiety symptoms, and a 32.9% reduction in depressive symptoms. Significant improvements were also observed across core trauma domains including intrusive memories, hyperarousal, avoidance behaviours, and negative alterations in mood and cognition, suggesting meaningful stabilisation of participants' trauma responses and psychological readiness to continue operational service.

Discussion

The Repower model represents a shift from reactive treatment towards preventive psychological sustainment for military healthcare personnel. By embedding recovery before functional deterioration occurs, the program reframes psychological health as a component of force readiness rather than solely a clinical outcome. The multidisciplinary design acknowledges that recovery extends beyond symptom reduction to include restoration of identity, professional purpose, social connectedness and operational confidence. Importantly, participation is recognised by Ukrainian defence authorities as an official work assignment rather than leave, reflecting an evolving understanding that psychological resilience constitutes an essential element of military capability. This approach aligns with emerging concepts of human performance optimisation and force preservation that may have broader relevance across allied military health systems.

Conclusion

Preventive psychological recovery programs for active-duty military medics offer a promising approach to sustaining operational readiness during prolonged conflict. The Repower experience provides an innovative and scalable model that integrates evidence-informed psychological support, peer connection, professional identity, and international collaboration. As military organisations increasingly recognise psychological resilience as a core capability, similar preventive recovery frameworks may provide valuable lessons for defence health services internationally.

Mental Health Screening in Australian Defence Force Ab Initio Pilot. Part 1: Implementing a Screening-Plus Model: Protocol and Early Learnings from the RCDVS Pilot Study

Ms Peta Fry¹, Dr Jack Roberts²

¹ Department Of Defence, Australia

² Queensland University of Technology, Australia

Biography:

Peta Fry is a registered psychologist and Board-approved supervisor with over 20 years' experience across clinical, organisational, and counselling domains. She is currently Assistant Director, Mental Health Surveillance within the Australian Department of Defence, where she leads

a team delivering operational mental health data analysis and insights.

Ms Fry contributes to mental health reform and projects, including implementation of recommendations from the Royal Commission into Defence and Veteran Suicide. Her qualifications include psychology, suicide prevention and management, and is currently undertaking postgraduate training in clinical epidemiology.

Dr Jack Roberts is a health economist and Research Fellow at the Centre for Healthcare Transformation, Queensland University of Technology. He completed his PhD in Health Economics in 2026, building on a multidisciplinary background that includes biomedical science and communication. Dr Roberts specialises in economic evaluation, preference-based measurement, and advanced analysis of clinical, registry, and epidemiological data, with a strong focus on respiratory and paediatric health.

He has extensive experience in clinical research operations and contributed to translational research that informs healthcare decision-making. Dr Roberts has authored multiple peer-reviewed publications in leading journals. His contributions have been recognised through competitive scholarships and awards, including a Rising Star Award at the 2025 World Bronchiectasis Conference.

Background

The Royal Commission into Defence and Veteran Suicide (RCDVS) identified limitations in existing mental health care pathways, including reliance on self-referral and variability between Services. In response to Recommendation 65, the Australian Defence Force will implement a pilot of a Screening-Plus model during ab initio training. The Screening-Plus model consists of a brief mental health questionnaire and semi-structured interview with a mental health clinician, and includes response review, mental state assessment, and psychoeducation. Participants are referred for care as clinically indicated. This pilot will evaluate the implementation of the Screening-Plus model to understand its performance as a pathway to mental health care, focussing on feasibility, acceptability, and screening yield of the intervention.

Methods (Protocol)

DDVA HREC approval: 710-26. In this quasi-experimental-, pragmatic cluster-designed evaluation of the Screening-plus model, four cohorts across three ADF recruit training establishments commencing training in 2026 (approx. 390 trainees) received a Screening-Plus intervention. Intervention cohorts are compared to several cohorts receiving

usual care before, during and after the intervention phase (approx. 1900 trainees). In addition to screening responses from intervention participants, demographic, administrative, and health service utilisation data was collected for both groups.

Primary outcomes include feasibility, acceptability and screening yield. Secondary outcomes include associations with clinical and occupational outcomes, with early training outcomes (e.g., attrition, medical episodes) and with resource use and implications.

A mixed-methods approach will be used to evaluate Screening-Plus. Quantitative analyses will focus on descriptive and modelled comparisons of time-to-care, referral patterns, resource utilisation and cost-consequences. Qualitative data is collected through semi-structured interviews and regular feedback from clinicians and organisational stakeholders. Evaluation of program implementation will be guided by the PRISM framework, to explore determinants across trainee, clinician, and organisational contexts.

Preliminary Results

Initial implementation has shown that integrating structured mental health screening into ab initio training schedules is inherently complex. Delivery must be carefully balanced against fixed training requirements, limited time, available training resources, and clinical resources.

Several key lessons have emerged:

- **Workflow integration:** Embedding screening within existing administrative processes reduces disruption and improves compliance.
- **User experience:** Clearly framing the purpose as performance optimisation, rather than exclusion, increases acceptability and improves the quality of responses.
- **Data governance:** Establishing secure, auditable data pipelines early is essential for scalability and building stakeholder confidence.
- **Threshold calibration:** Achieving the right balance between operational usefulness and false-positive risk requires ongoing refinement, particularly in a low-base-rate population.
- **Stakeholder engagement:** Continuous collaboration with recruiting, clinical, and command stakeholders ensures alignment and supports practical implementation.

Discussion

This pilot represents a pragmatic evaluation of a multi-component mental health screening model within a complex, highly structured training environment. The

Screening Plus approach extends beyond traditional screening by integrating clinician engagement with screening tools and psychoeducation.

The study design supports assessment of changes in mental health care pathways, including time to care, referral patterns, and service utilisation, while also identifying implementation factors relevant to scalability. Findings will inform ongoing reform by supporting evidence-based decision-making regarding integration, resourcing, and sustainability of routine screening activities for early career Defence personnel.

Keywords

Mental health screening, recruitment, military medicine, early intervention, feasibility, predictive modelling.

Please note: The opinions expressed in the presentation are that of the authors/presenters, and not of the Department of Defence.

Military Triage: Concepts Old and New

Dr Duncan McAuley

1 HQ94WG, RAAF, Amberley, Australia

Biography:

After medical school at Cambridge and London, I started training in General Medicine before switching to Emergency Medicine and becoming a consultant in 2005. I moved to Queensland in 2010 and joined RAAF Reserves in 2016, before transitioning to the Medical Specialists Program in 2025. I work clinically at the Royal Brisbane & Women's Hospital and Royal Flying Doctors Service, Qld. I am currently attending Australian Command and Staff Course (Military Art) in 2026.

My professional interests are military, austere and retrieval medicine, especially trauma care and use of austere POCUS. I enjoy mountaineering and trekking and have been a expedition doctor.

References

- ADF-I-1 PERSONNEL AND HEALTH CONSIDERATIONS, 2023
- NATO AJP-4.10 ALLIED JOINT DOCTRINE FOR MEDICAL SUPPORT, 2019
- NATO AMedP-1.10 MEDICAL ASPECTS IN THE MANAGEMENT OF A MAJOR INCIDENT/ MASS CASUALTY SITUATION, 2021
- ADF-I-0 LAW OF ARMED CONFLICT

- E. Fandre, Matthew. Medical Changes Needed for Large-Scale Combat Operations: Observations from Mission Command Training Program Warfighter Exercises. Military Review, 2020.
- F. Vassallo, J., Moran, C.G., Cowburn, P. and Smith, J., 2022. New NHS prehospital major incident triage tool: from MIMMS to MITT. Emergency medicine journal, 39(11), pp.800-802.
- G. Hurst, D.J. and Ray, T.L., 2025. Reassessing reverse triage in future conflict. BMJ Mil Health, 171(e1), pp.e1-e3.

1. History and Types of Triage

- a. Napoleonic triage: 1806 Battle of Jena Baron Larrey ambulance volante; 1846 British Naval Surgeon John Wilson: treated first those with severe injuries but likely to survive
- b. WW1 first use of word Triage by French Army: greatest good for the greatest number, severely injured should wait unless can be sorted quickly
- c. Triage in Emergency Departments
- d. Triage for evacuation
- e. Reverse triage

2. Current Triage Tools

- a. From ATLS:

Multiple Casualty Incident: Patient care resources are overextended but not overwhelmed. Use the 'P' system of triage.

Mass Casualty Event: Patient care resources are overwhelmed and cannot be immediately supplemented. Use the 'T' system of triage.

- b. From ADF Doctrine:

A mass casualty event overwhelms the healthcare capability, with the number of casualties vastly exceeding the health resources in a short period of time. It can occur as a result of the tactical situation, combat activity or resourcing issues

Large Scale Combat Operations provide many challenges eg need for simple, accurate field triage in MASCAL need for triage given limited surgical capability, limited resources especially blood or oxygen.

- c. Triage Sieve and Sort

But.....identifies <50% patients requiring urgent interventions. Never been validated in military trauma population, Sort requires knowledge of GCS and ability to take Blood Pressure.

Other triage tools include: START, SALT, Berlin Triage Algorithm, Australasian Triage Scale (not for MCIs), SMART Triage, Modified Physiological Triage Tool.

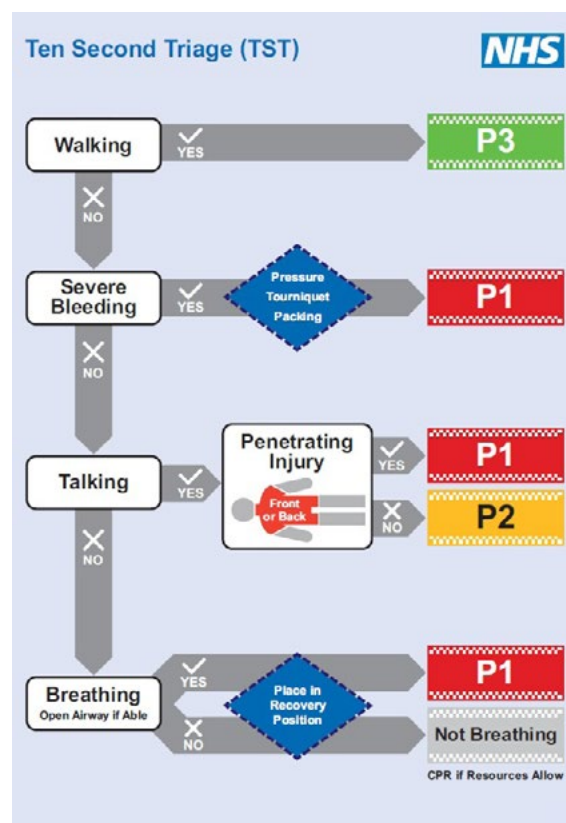
- d. NATO Doctrine: Triage should be directed by the best qualified medical personnel available, preferably a medical officer experienced in emergency medicine. (This is for R2/3, not field triage).

3. New Triage Tools

Sieve and Sort only 50% accurate in identifying casualties who need emergent interventions.

Ideal Field Triage: rapid, can treat while triaging, doesn't require expertise or cognitive load (not physiological), doesn't require equipment, avoids decision on death, appropriate for military injuries.

Ten Second Triage



From MIMMS to MITT: introduced NHS in 2023, developed from MPTT-24 (RR <12 or >23, HR >100). Outperforms Triage Sort (Vassallo et al, 2023)

4. Reverse Triage

Method to optimise allocation of limited resources during high demand situations, eg mass casualty incidents"

In Military setting this could be: treat less injured first for return to duty (examples from French Army WW1, German Army WW2 but NOT in doctrine (ADF or US) and explicitly mentioned in IHL as not appropriate, Article 12 of the 1949 Geneva Convention (I) for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field states: "Only urgent medical reasons will authorize priority in the order of treatment to be administered".

Reverse triage is referred to in literature as applied to Hospitals: discharging patients early to make room.

As well as legal there are psychological implications on: military medical personnel (potential for moral injury), unit morale.

Preliminary evaluation of the RSL Be:Well digital program for Australian Defence personnel

Dr Stephanie Howarth^{1,2,5}, Kelly Brown^{1,2},
Dr Tho Dang^{1,2}, Dr Sarah Hampton¹,
Angeli Tabinga^{1,2}, A/Prof Son Hong Nghiem⁴,
Dr Camila Guindalini^{1,2}, Miriam Kent¹,
Dr Pilar Rioseco^{1,3}

¹ Gallipoli Medical Research, Greenslopes Private Hospital, Brisbane, Australia

² School of Medicine, The University of Queensland, Brisbane, Australia

³ School of Public Health, The University of Queensland, Brisbane, Australia

⁴ Centre for Health Services Research, The University of Queensland, Brisbane, Australia

⁵ Faculty of Medicine, Health and Human Sciences, Macquarie University, New South Wales, Australia

Biography:

Mrs Kelly Brown is a Psychologist and Research Officer at Gallipoli Medical Research (GMR). She holds a Master of Clinical Psychology from Queensland University of Technology and has been involved in clinical and applied research since 2017. Her work focuses on the health and wellbeing of Australian Defence Force veterans and their families, spanning clinical trials, program evaluation, qualitative methods, and the co-design of digital wellbeing resources. She has contributed to research examining sleep, mental health, chronic pain, transition and reintegration, and digital health interventions. Her work is centred on translating research into meaningful real-world outcomes and accessible, evidence-based resources.

Background

The Royal Commission into Defence and Veteran suicide showed that many current and ex-serving Australian Defence Force (ADF) personnel experience challenges related to their physical and mental health, particularly during/after separation from the military. Despite the recognised need for support, help-seeking may be limited by stigma and cultural barriers. Digital health interventions may offer an alternative by providing private, accessible and self-directed support.

RSL Be:Well is an online psychoeducation program with free, self-directed, 20-minute modules providing health information, tips and resources on health issues common to veterans. The modules are evidence-informed and aim to improve knowledge and self-awareness, increase confidence to make changes, and connect veterans with relevant support resources.

Commissioned by RSL Queensland Branch, the present pilot study aimed to evaluate the feasibility, acceptability, user experience and preliminary impact of the RSL Be:Well program focusing on three modules targeting sleep, physical activity and nutrition (*Be:Sleep Savvy*, *Be:Exercise Inspired* and *Be:Food Positive*).

Methodology

A pre-post evaluation design was used with baseline, post-program and follow-up surveys, 4-6 weeks apart. Program evaluation included questions about acceptability, appropriateness, feasibility, user satisfaction, and module-specific feedback. Standardised measures of health literacy, behaviour change, health and wellbeing were also collected.

Eligible participants included Australian veterans (current/ex-serving ADF members) who had not completed RSL Be:Well modules. Recruitment occurred in February-May 2026 via online and print media. Registered RSL Be:Well users who had not completed modules were also invited to participate. Data was collected online via Qualtrics. A data integrity protocol was developed to assess the validity of responses. The project was deemed an evaluation activity (protocol 670-25).

Results

A total of 134 baseline (S1), 70 post-program (S2) and 63 follow up (S3) surveys were completed. Sixty-six percent of participants were aged 45 years or older, 79% were male, 71% were ex-serving, 58% reported long-term health condition, and 44% had deployed to a combat zone.

Acceptability, appropriateness and feasibility were rated highly with mean scores of over 4.3 (out of 5).

Across the 12 items, 84%–96% of participants agreed or completely agreed with the positive statements. User-experience ratings were also high: 93% agreed that RSL Be:Well was easy to move through, 91% trusted the information and advice provided, and 90% agreed that it was worth the time and effort. Nearly all participants (96%) would recommend RSL Be:Well to the veteran community.

Module specific findings were similarly positive. Ninety-four percent of participants reported that *Be:Sleep Savvy* improved their sleep knowledge and self-awareness, 94% reported that *Be:Food Positive* improved their knowledge of the relationship between diet, pain, gut health and fitness, and 91% reported that *Be:Exercise Inspired* improved their knowledge about having a healthy relationship with physical activity.

Most participants (83%) reported having implemented something they learnt from the modules. Among those who implemented something, 66% rated the positive impact of these changes on their health and wellbeing as 'a lot' or 'significantly', and 74% were very or extremely confident that they could continue applying what they had learnt.

Longitudinal analyses also identified favourable changes in psychological distress from baseline to post-program, and in ability to find good health information, sleep health and fruit intake from baseline to follow-up.

Conclusion

Preliminary findings indicated high acceptability, appropriateness and feasibility of RSL Be:Well, alongside positive user experience, strong reported application of learning and favourable changes in several health and wellbeing outcomes. Together,.

Ready to Prescribe? Insights from a National Survey of the ADF Contracted RN Workforce

Ms Liz Dalla Santa^{1,2}, Ms Toni Arndell¹,
Ms Amanda Woods¹, Ms Narelle Basham³,
Ms Terri Antonio³

¹ Bupa, Melbourne, Australia

² Monash University, School of Primary and Allied Health Care, Faculty of Medicine Nursing and Health Sciences, Melbourne, Australia

³ Serco, Sydney, Australia

Biography:

Toni brings a diverse background across healthcare delivery, government, and consulting, grounded

in a strong commitment to quality, safety, and person-centred care. Clinically trained as a Speech Pathologist, she has delivered care across Australia, the UK, and the Middle East, including establishing services for vulnerable populations and enabling patients to be active partners in their care.

Toni holds a Global MBA and has worked with EY's Global and MENA Performance Improvement and Transformation practices. She also served as the EY Global Advisory Resident, contributing to strategy and solution development, knowledge and change management, whilst also helping clients reimagine all aspects of the care experience. Most recently, Toni was the National Engagement Lead for a multi-institutional Government-funded aged care research program focused on optimising service delivery and cross-sector collaboration.

Having had family serve with both Army and the RAAF Toni has a deep appreciation of the life-changing impact that a great care experience can have on the lives of ADF members.

Background

Registered Nurse Prescribing (RNP) represents a significant advancement in nursing scope of practice within Australia, aligned to ongoing national health workforce reform and evolving legislative frameworks supporting non-medical prescribing. Recent policy directions emphasise improving timely access to medicines, optimising multidisciplinary care, and strengthening workforce sustainability. Within the Australian Defence context, healthcare delivery is largely supported by a contracted civilian nursing workforce, creating unique opportunities to enhance capability and access through expanded nursing roles. RNP is enabled through completion of accredited postgraduate education and endorsement pathways, positioning nurses to contribute safely and effectively to prescribing within defined clinical governance frameworks.

Aim

To assess workforce readiness, interest, and perceived barriers among a contracted Defence health nursing workforce for participation in RNP training and pilot programs.

Methods

A cross-sectional Expression of Interest survey was conducted from 4–13 May 2026 targeting Senior Nurses (NCs) and Registered Nurses (RNs and MHRNs) delivering contracted health services to Defence. The survey captured workforce demographics, eligibility for prescribing pathways, likelihood of participation, and key enablers and barriers. Quantitative data were analysed descriptively, and qualitative

responses were thematically analysed to identify key insights relevant to implementation.

Results

A total of 250/697 Registered Nurses (36%) participated in the expression of interest survey. Among respondents, 76% indicated interest in undertaking a Registered Nurse prescribing course, of whom 96% reported willingness to participate in a pilot program. Interest in participation was consistent across organisations, with key enabling factors identified as financial incentives (~76%), paid study time (~74%), and financial support (~70%).

Respondents were predominantly clinically focused, with 93% of Registered Nurses (196/212) reporting that they spent 51–100% of their time on clinical work, while 65% (138/212) reported spending ≤25% of their time on clinical management or supervision. In contrast, 53% of Nursing Coordinators (20/38) reported spending 1–50% of their time on clinical work, and 26% (10/38) reported dedicating 100% of their time to clinical management or supervision.

Regional participation varied, with the highest engagement observed in New South Wales (43%; 22/51) and the lowest in South Australia (26%; 14/54).

Qualitative analysis identified three key themes: improved patient access through reduced wait times and faster medication access; expansion of nursing scope, enhancing autonomy and clinical capability; and the need for robust governance, structured implementation, and mentoring to support safe and effective prescribing practice.

Qualitative findings highlighted three key themes:

- Improved patient access and outcomes – anticipated reductions in wait times and more timely, safe access to medications in Defence health centres.
- Expanded nursing scope and autonomy – strengthening advanced practice capability through postgraduate education and endorsement.
- Need for structured implementation – importance of governance, supervision, and organisational support to ensure safe integration into prescribing practice.

Respondents also identified operational efficiencies, including reduced reliance on medical officers for routine prescribing and enhanced service delivery across primary care, sexual health, and pre-deployment screening.

Conclusion

This study demonstrates a highly engaged and workforce-ready contracted Defence nursing cohort with strong interest in RNP as an advanced practice pathway within the evolving Australian regulatory environment. Successful implementation will require investment in postgraduate education, protected training time, and robust clinical governance frameworks tailored to the Defence setting. RNP has the potential to enhance patient access, support safe and timely care, and contribute to a more resilient, responsive, and mission-ready healthcare workforce, positioning nurses as key leaders in contemporary models of care.

Implications

By time of presentation we will have additional Medical Officer workforce survey data to integrate the perspective of potential Authorised Prescribers, enabling a fuller picture of barriers and enablers in the Defence context.

Real-world evaluation of the online Military-Civilian Adjustment and Reintegration Measure (M-CARM)

Miss Angeli Tabinga^{1,2}, Dr Karolina Alichniewicz^{1,2}, Miss Gina Fisher¹, Dr Camila Guindalini^{1,2}, Dr Laura G. Carrascosa^{1,2}

1 Gallipoli Medical Research, Greenslopes, Australia

2 The University of Queensland, St Lucia, Australia

Biography:

Angeli Tabinga is a Research Coordinator at Gallipoli Medical Research (GMR) and an Honorary Research Fellow at the University of Queensland. At GMR, Angeli is involved in translational research for veteran families, including investigating emerging and adjunct treatments for common mental health conditions affecting veterans, and the spillover effects of military service on family quality of life. Angeli has worked in improving the health and wellbeing of various populations (Australian Aboriginal and Torres Strait Islander people, culturally and linguistically diverse communities, children and adolescents, and military families) and continues to engage in projects that promote health equity.

Background

The military-to-civilian transition is recognised as a diverse experience shaped by several factors. Preparing members for social and psychological dimensions of transition, is key for supporting veterans through this period. The availability of

measures that assess these areas is therefore critical for understanding individual needs and informing the provision of transition supports. Acknowledged by the Royal Commission into Defence and Veteran Suicide as an assessment tool that enables a more holistic approach to understanding the needs of veterans, the Military-Civilian Adjustment and Reintegration Measure (M-CARM) is a validated, 21-item, five-factor self-report questionnaire designed to assess adjustment and reintegration to civilian life following military service. Since its launch in 2020, M-CARM has been freely available on the M-CARM website (<https://m-carm.org/>) for use by veterans and clinicians supporting transitioning members. Despite more than five years of implementation, the platform's utilisation and user characteristics of those who choose to engage with it have not been examined. Therefore, this study aimed to evaluate the real-world use of the online M-CARM platform, including user characteristics, usage patterns, and psychometric performance.

Method

Reach, uptake and engagement were assessed using data collected through routine quality assurance processes. Website analytics were retrieved through Google Analytics from the start of data collection in February 2022 to February 2025. Descriptive statistics were computed to summarise the sources of website traffic and the geographic location of visitors to the M-CARM website. Survey data from 1,098 completed questionnaires were retrieved from the M-CARM website between December 2020 and February 2025. Statistical analyses were conducted to explore whether M-CARM total scores and domain-specific areas of need differed according to three demographic variables: age, gender, and service background. Confirmatory factor analysis (CFA) was also performed to evaluate the fit of the hypothesised five-factor structure.

Results

Website analytics showed strong real-world engagement, with 10,155 sessions on the M-CARM website, since February 2022. Most site visitors (83%) came through direct or organic searches. Visitors were mostly from Australia (58%), followed by the U.S. (28.2%), and U.K. (2.7%). During this period, 533 users completed the M-CARM, representing completion rates of approximately 6%.

Among survey respondents, the mean M-CARM score was 64.42 (SD = 17.31; range = 21-105), with over half meeting criteria for three to five areas of need (55.6%), indicating substantial reintegration challenges. The most commonly identified areas of need were Regimentation (68.3%), Beliefs about

Civilians (67.8%), and Resentment and Regret (59.9%). Navy veterans had almost twice the odds of meeting criteria for Resentment and Regret compared with Army veterans (OR = 1.99, 95% CI [1.38, 2.90], $p = .0003$), while veterans aged 56–75 had significantly lower odds than those aged 18–25 (OR = 0.42, 95% CI [0.24, 0.73], $p = .002$), indicating that tailored support may be beneficial for particular groups.

The CFA demonstrated that the original five-factor structure was maintained in this independent sample, with total and domain scores comparable to the original validation cohort and acceptable model fit ($\chi^2(179) = 936.83$, RMSEA = 0.062, CFI = 0.925, TLI = 0.912), supporting the M-CARM's reliability and validity as a self-reported online questionnaire outside of a research setting.

Conclusion

The findings indicate that M-CARM can successfully engage veterans in a real-world online environment and provide further evidence of its psychometric properties. The high prevalence of identified reintegration needs suggests the tool is reaching veterans who may benefit from further support, while substantial international uptake highlights an opportunity for cross-cultural validation and adaptation of the tool. These findings support M-CARM as a scalable digital screening tool with potential to facilitate earlier identification of reintegration needs and guide referral pathways in clinical and community settings.

The Worm Has Turned: A New Era in Soil-Transmitted Helminth Management

Dr Rebecca Suhr¹, Dr James Smith^{1,2}

¹ Australian Defence Force Malaria and Infectious Disease Institute, Brisbane, Australia

² Queensland Health, Brisbane, Australia

Biography:

Dr Rebecca Suhr is the current Research Medical Officer at the ADF Malaria and Infectious Disease Institute. Coming from a background in Close and General Health within the Army, she is focused on translating current research findings and disease surveillance information into policy changes and actionable steps for clinicians and health planners.

The new Soil-transmitted Helminth DHM chapter, published this year, is the first ADF policy to inform testing, treatment, and eradication of soil-transmitted

helminths (STH) within the ADF population. We present a summary of the key points of the new chapter, most importantly, the recommended force health protection countermeasures, including eradication.

We will also review the information that informed the development of the chapter: the helminths of concern, their life cycles, and the threats they pose to our soldiers' health; how soldiers could be exposed during exercise, deployment, or posting and subsequently require eradication treatment; testing and treatment options should concerns or symptoms arise; and historical examples of helminth infections in military forces.

Notes

Notes



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